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ICT Information and Communications Technology

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Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

ICT10115 Certificate I in Information, Digital Media and Technology

Modification History

Release	Comments
Release 1	This qualification first released with ICT Information and Communications Technology Training Package Version 1.0.

Qualification Description

This qualification provides the skills and knowledge for individuals to safely perform foundation digital literacy tasks using a personal computer and a range of software applications and digital devices.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil

Packaging Rules

Total number of units = 6

4 core units plus

2 elective units

The elective units consist of:

- up to 2 from the elective units listed below
- up to 1 from elsewhere in the ICT Information and Communications Technology Training Package or any other Training Package or accredited course at Certificate I or II level.

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The elective units chosen must be relevant to the work outcome and meet local industry needs.

Core units

ICTICT101 Operate a personal computer

ICTICT102 Operate word-processing applications

ICTICT103 Use, communicate and search securely on the internet

ICTICT104 Use digital devices

Elective units

BSBWHS201 Contribute to health and safety of self and others

BSBSUS201 Participate in environmentally sustainable work practices

BSBCMM101 Apply basic communication skills

ICTICT105 Operate spreadsheet applications

ICTICT106 Operate presentation packages

ICTICT107 Use personal productivity tools

ICTICT108 Use digital literacy skills to access the internet

Qualification Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICT10115 Certificate I in Information, Digital Media and Technology	ICA10111 Certificate I in Information, Digital Media and Technology	Updated to meet Standards for Training Packages	Equivalent qualification

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICT20115 Certificate II in Information, Digital Media and Technology

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package version 2.0. Release 2 created to update unit codes.
Release 1	This version first released with ICT Information and Communications Technology Training Package version 1.0.

Qualification Description

This entry level qualification provides the foundation skills and knowledge to use information and communications technology (ICT) in any industry.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil

Packaging Rules

Total number of units = 14

7 core units *plus*

7 elective units

The elective units consist of:

- *up to 7 from the elective units listed below*
- *up to 3 from elsewhere in ICT Information and Communications Technology Training Package or any other Training Package or accredited course at Certificate II or III level.*

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The elective units chosen must be relevant to the work outcome and meet local industry needs.

Core units

BSBWHS201 Contribute to health and safety of self and others

BSBSUS201 Participate in environmentally sustainable work practices

ICTICT201 Use computer operating systems and hardware

ICTICT202 Work and communicate effectively in an ICT environment

ICTICT203 Operate application software packages

ICTICT204 Operate a digital media technology package

ICTWEB201 Use social media tools for collaboration and engagement

Elective units

CUACAM201 Assist with a basic camera shoot

CUADIG201 Maintain interactive content

CUADIG303 Produce and prepare photo images

CUAPOS201 Perform basic vision and sound editing

CUASOU202 Perform basic sound editing

ICPDMT321 Capture a digital image

ICTICT205 Design basic organisational documents using computing packages

ICTICT206 Install software applications

ICTICT207 Integrate commercial computing packages

ICTICT208 Operate accounting applications

ICTICT209 Interact with ICT clients

ICTICT210 Operate database applications

ICTICT211 Identify and use basic current industry specific technologies

ICTICT212 Incorporate Indigenous needs and perspectives into ICT environment

ICTSAS201 Maintain inventories for equipment, software and documentation

ICTSAS202 Apply problem-solving techniques to routine ICT malfunctions

ICTSAS203 Connect hardware peripherals

ICTSAS204 Record client support requirements

ICTSAS205 Maintain ICT system integrity

ICTSAS206 Detect and protect from spam and destructive software

ICTSAS207 Protect and secure information assets

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ICTSAS208 Maintain ICT equipment and consumables

ICTSAS209 Connect and use a home based local wireless network

Qualification Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICT20115 Certificate II in Information, Digital Media and Technology (Release 2)	ICT20115 Certificate II in Information, Digital Media and Technology (Release 1)	Updated unit codes.	Equivalent qualification

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICT20219 Certificate II in Telecommunications Network Build and Operation

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Qualification Description

This is an entry-level qualification for telecommunications linesworkers working on the construction and maintenance of high-speed national broadband network (NBN) infrastructure.

Linesworkers may:

- perform cable and infrastructure work underground, which may involve civil and construction work such as site preparation, building of enclosures, installing mounting brackets and hauling underground cables
- work above ground to install fibre or metallic aerial cable and infrastructure, which may also include installing aerial lead-in cables to customer premises and providing traffic management.

Licensing/Regulatory Information

Work functions in the occupational areas where this qualification may be used may be subject to regulatory requirements. Refer to the ICT Information and Communications Technology Companion Volume Implementation Guide or the relevant regulator for details of licensing, legislative or certification requirements.

Cabling on the customer side of the network termination device must be carried out according to requirements of the Australian Communications and Media Authority (ACMA) and relevant industry registration bodies, and in line with the specifications of the access network owner.

Entry Requirements

Nil.

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Packaging Rules

Total number of units = 12

5 core units, plus

7 elective units

The elective units selected may consist of:

- up to 7 units from Group A Cabling
- up to 4 units from Group B Telecommunications
- up to 3 units from Group C General
- up to 2 units from this Training Package or any currently endorsed Training Package or accredited course where the units are packaged in an Australian Qualification Framework (AQF) level 2 or 3 qualification.

Elective units must be relevant to the work environment and the qualification, maintain the integrity of the AQF alignment and contribute to a valid, industry-supported vocational outcome. This could be achieved by selecting a specialisation (see below) or by selecting an appropriate mix of electives from Groups A, B and C.

Units selected from other training packages or accredited courses must not duplicate units selected from, or available within, the ICT Information and Communications Technology Training Package.

Core units

ICTTEN202 Use hand and power tools

ICTTEN208 Use electrical skills when working with telecommunications networks

ICTTEN211 Work effectively in a telecommunications network environment

ICTWHS204 Follow work health and safety and environmental policy and procedures

ICTWOR308 Provide customer service to telecommunications customers

Elective units

Group A Cabling

ICTCBL211 Install an above ground equipment enclosure

ICTCBL212 Erect aerial cable supports

ICTCBL248 Install and terminate hard-line coaxial cable

ICTCBL249 Haul underground cable for installation and maintenance work

ICTCBL250 Haul and fix aerial cable

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ICTCBL251 Install aerial and underground cable lead-ins

ICTCBL252 Joint and terminate coaxial cable

ICTCBL253 Construct underground telecommunications infrastructure

ICTCBL254 Joint metallic conductor cable in access network

ICTPMG201 Prepare site for support installation

Group B Telecommunications

ICTBWN303 Install lead-in module and cable for fibre to the premises

ICTBWN306 Use radio frequency measuring instruments

ICTBWN307 Use optical measuring instruments

ICTCBL303 Install and terminate coaxial cable

ICTCBL320 Jumper metallic conductor cable in the access network

ICTCBL322 Install, test and terminate optical fibre cable on customer premises

ICTCBL329 Install underground cable for communications applications

ICTCBL330 Splice and terminate optical fibre cable for telecommunications projects

ICTCBL333 Install aerial cable for communications applications

ICTCBL334 Install underground enclosures and conduit

ICTTEN210 Install underground telecommunications infrastructure

ICTTEN310 Remove and replace electronic circuit boards in carrier equipment

ICTTEN312 Install telecommunications network equipment

ICTTEN313 Work on and resolve recurrent network faults

ICTTEN318 Inspect, clean and handle optical fibre cable and connectors

Group C General

BSBSUS201 Participate in environmentally sustainable work practices

CPCCCM2007 Use explosive power tools*

CPCCDE3014A Remove non-friable asbestos*

CPCCOHS1001A Work safely in the construction industry

CPCCWHS2001 Apply WHS requirements, policies and procedures in the construction industry

CPCPCM2043A Carry out WHS requirements

HLTAID001 Provide cardiopulmonary resuscitation

OR

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HLTAID003 Provide first aid

ICTTEN207 Install and test internet protocol devices in convergence networks

ICTWHS201 Provide telecommunications services safely on roofs

ICTWHS205 Work safely near power infrastructure at a telecommunications workplace

OR

UETTDREL14A Working safely near live electrical apparatus as a non-electrical worker

ICTWOR202 Work effectively in the digital and telecommunications industry

RIIWHS204D Work safely at heights

*Note the following prerequisite unit requirements:

Prerequisite unit requirements in this qualification	
Unit in this qualification	**Prerequisite unit**
CPCCCM2007 Use explosive power tools	CPCCWHS2001 Apply WHS requirements, policies and procedures in the construction industry
CPCCDE3014A Remove non-friable asbestos	CPCCOHS1001A Work safely in the construction industry

Specialisations

One of the following three specialisations must be undertaken to ensure worker skills meet the required safety practices for each specialisation.

Telecommunications Linesworker Hybrid Fibre Coaxial

Six of the following elective units must be selected:

- ICTBWN306 Use radio frequency measuring instruments
- ICTCBL250 Haul and fix aerial cable
- ICTCBL251 Install aerial and underground cable lead-ins
- ICTCBL252 Joint and terminate coaxial cable
- ICTPMG201 Prepare site for support installation

Plus:

- ICTWHS201 Provide telecommunications services safely on roofs

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OR

- RIIWHS204D Work safely at heights

Telecommunications Linesworker Fibre

The following 7 elective units must be selected:

- ICTCBL211 Install an above ground equipment enclosure
- ICTCBL250 Haul and fix aerial cable
- ICTCBL253 Construct underground telecommunications infrastructure
- ICTCBL329 Install underground cable for communications applications
- ICTPMG201 Prepare site for support installation
- ICTTEN310 Remove and replace electronic circuit boards in carrier equipment
- ICTTEN318 Inspect, clean and handle optical fibre cable and connectors

Telecommunications Linesworker Copper

The following 6 elective units must be selected:

- ICTCBL211 Install an above ground equipment enclosure
- ICTCBL250 Haul and fix aerial cable
- ICTCBL253 Construct underground telecommunications infrastructure
- ICTCBL320 Jumper metallic conductor cable in the access network
- ICTCBL329 Install underground cable for communications applications
- ICTPMG201 Prepare site for support installation

The achievement of a specialisation will be identified on testamurs as follows:

- ICT20219 Certificate II in Telecommunications Network Build and Operation (Telecommunications Linesworker Hybrid Fibre Coaxial)
- ICT20219 Certificate II in Telecommunications Network Build and Operation (Telecommunications Linesworker Fibre)
- ICT20219 Certificate II in Telecommunications Network Build and Operation (Telecommunications Linesworker Copper)

Qualification Mapping Information

No equivalent qualification. Supersedes and is not equivalent to ICT20215 Certificate II in Telecommunications Network Build and Operate.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICT20319 Certificate II in Telecommunications Technology

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Qualification Description

This is an entry-level qualification for telecommunications technology operators who may:

- install telecommunications equipment, data cabling and cabling products on customer premises
- perform fault-finding on a limited range of digital reception equipment for both cable television and free-to-air television reception, for either a customer or an enterprise
- install and maintain telecommunications radio communications equipment in base stations and connect wireless base stations
- install and maintain telecommunications equipment on high structures including radio towers or for installation and connection of wireless base stations.

The qualification is suited to an individual undertaking work experience, or in a probationary period in employment.

It is particularly applicable to school-based delivery as an entry-level pathway to employment and is suitable as an Australian traineeship or apprenticeship pathway, except for the units of competency that involve high-risk work age restrictions.

Licensing/Regulatory Information

Work functions in the occupational areas where this qualification may be used are subject to regulatory requirements. Refer to the ICT Information and Communications Technology Companion Volume Implementation Guide or the relevant regulator for details of licensing, legislative or certification requirements.

Cabling at the customer premises must be carried out according to requirements of the Australian Communications and Media Authority (ACMA) and relevant industry registration bodies, and in line with the specifications of the access network owner.

High risk work (HRW) licences are required for dogging work and rigging as outlined on the Safe Work Australia website.

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The model WHS Regulations require people performing HRW to be over 18 years of age and to hold the right HRW licence. HRW licences are issued by state/territory governments: refer to the relevant body to ensure compliance with regulations.

Entry Requirements

Nil.

Packaging Rules

Total number of units = 13

7 core units, plus

6 elective units

The elective units selected may consist of:

- up to 6 units from any group of elective units listed below according to the specialisation packaging rules, outlined below, where a specialisation is the required outcome
- up to 2 units from this Training Package or any currently endorsed Training Package or accredited course where the units are packaged in an Australian Qualifications Framework (AQF) Level 2 or 3 qualification.

Elective units must be relevant to the work environment and the qualification, maintain the integrity of the AQF alignment and contribute to a valid, industry-supported vocational outcome.

Units selected from other Training Packages or accredited courses must not duplicate units selected from, or available within, the ICT Information and Communications Technology Training Package.

Core units

BSBCUS201 Deliver a service to customers

ICTTEN202 Use hand and power tools

ICTTEN207 Install and test internet protocol devices in convergence networks

ICTTEN208 Use electrical skills when working with telecommunications networks

ICTTEN211 Work effectively in a telecommunications network environment

ICTWHS204 Follow work health and safety and environmental policy and procedures

ICTWOR202 Work effectively in the digital and telecommunications industry

Elective units

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Group A Cabling

ICTCBL205 Joint metallic conductor cable on customer premises

ICTCBL206 Alter services to existing cable system

ICTCBL210 Install a telecommunications service to a building

ICTCBL211 Install an above ground equipment enclosure

ICTCBL212 Erect aerial cable supports

ICTCBL219 Apply safe technical work practices for cabling registration when configuring an ADSL circuit

ICTCBL239 Install customer cable support systems

ICTCBL240 Place and secure customer cable

ICTCBL241 Terminate metallic conductor customer cable

ICTCBL242 Install functional and protective telecommunications earthing system

ICTCBL246 Install, maintain and modify customer premises communications cabling: ACMA Restricted Rule*

ICTCBL249 Haul underground cable for installation and maintenance work

ICTCBL250 Haul and fix aerial cable

ICTCBL251 Install aerial and underground cable lead-ins

ICTCBL252 Joint and terminate coaxial cable

ICTCBL253 Construct underground telecommunications infrastructure

ICTCBL254 Joint metallic conductor cable in access network

ICTCBL330 Splice and terminate optical fibre cable for telecommunications projects

ICTCMP201 Organise and monitor cabling to ensure compliance with regulatory and industry standards

ICTCMP203 Perform restricted customer premises broadband cabling work: ACMA Restricted Rule*

Group B Networking

ICTTEN203 Install and configure a home or small office network

ICTTEN204 Install and configure a small to medium business network

ICTTEN205 Build and maintain a secure network

ICTTEN206 Operate new media software packages

Group C Radio Communications

ICTRFN201 Install a satellite antenna

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ICTRFN202 Install a terrestrial antenna

ICTRFN304 Construct and test a radio communications device

Group D Rigging

ICTTCR201 Use rigging practices and systems on telecommunications network structures

ICTTCR202 Use operational safety in a telecommunications rigging environment

ICTTCR203 Use safe rigging practices to climb and perform rescues on telecommunications network structures

CPCCLDG3001A Licence to perform dogging

CPCCLRG3001A Licence to perform rigging basic level*

Group E General

CPCCWHS1001 Prepare to work safely in the construction industry

HLTAID001 Provide cardiopulmonary resuscitation

OR

HLTAID003 Provide first aid

ICTICT206 Install software applications

ICTPMG201 Prepare site for support installation

ICTPMG202 Plan, organise and undertake work activities

ICTSAS203 Connect hardware peripherals

ICTWHS201 Provide telecommunications services safely on roofs

ICTWHS202 Work safely in a radio frequency electromagnetic radiation environment

ICTWHS205 Work safely near power infrastructure at a telecommunications workplace

OR

UETTDREL14A Working safely near live electrical apparatus as a non-electrical worker

*Note the following prerequisite unit requirements:

Prerequisite unit requirements in this qualification	
Unit in this qualification	**Prerequisite unit**
CPCCLRG3001A Licence to perform rigging basic level	CPCCLDG3001A Licence to perform dogging
ICTCBL246 Install, maintain and modify customer premises communications cabling:	ICTTEN208 Use electrical skills when working with telecommunications networks

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Prerequisite unit requirements in this qualification	
Unit in this qualification	**Prerequisite unit**
ACMA Restricted Rule	ICTWHS204 Follow work health and safety and environmental policy and procedures
ICTCMP203 Perform restricted customer premises broadband cabling work: ACMA Restricted Rule	ICTCBL246 Install, maintain and modify customer premises communications cabling: ACMA Restricted Rule OR ICTCBL239 Install customer cable support systems and ICTCBL240 Place and secure customer cable and ICTCBL241 Terminate metallic conductor customer cable and ICTCMP201 Organise and monitor cabling to ensure compliance with regulatory and industry standards

Specialisations

Where relevant, specialisations can be used for this qualification in:

- cabling
- networking
- radio communications
- rigging
- telecommunications cabling.

The achievement of a specialisation will be identified on testamurs as follows:

- ICT20319 Certificate II in Telecommunications Technology (Cabling)
- ICT20319 Certificate II in Telecommunications Technology (Telecommunications Cabling)
- ICT20319 Certificate II in Telecommunications Technology (Networking)
- ICT20319 Certificate II in Telecommunications Technology (Radio Communications)
- ICT20319 Certificate II in Telecommunications Technology (Rigging).

Cabling

Select 6 elective units from Group A Cabling.

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Telecommunications Cabling

Select the following 2 elective units from Group A Cabling:

- ICTCBL246 Install, maintain and modify customer premises communications cabling: ACMA Restricted Rule*
- ICTCMP203 Perform restricted customer premises broadband cabling work: ACMA Restricted Rule*

Select 4 further elective units from the remaining elective units in Group A Cabling.

Networking

Select at least 4 elective units from Group B Networking.

Radio Communications

Select the 3 elective units from Group C Radio Communications.

Select at least 1 elective unit from Group D Rigging.

Rigging

Select the 5 elective units from Group D Rigging.

Note: This specialisation is not suitable for school-based delivery due to high-risk work age restrictions.

Qualification Mapping Information

No equivalent qualification. Supersedes and is not equivalent to ICT20315 Certificate II in Telecommunications Technology.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICT30120 Certificate III in Information Technology

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.
Release 2	Correcting an error. No change to qualification content.

Qualification Description

This qualification reflects the role of individuals who are competent in a range of Information and Communications Technology (ICT) roles, including animation, basic cloud computing, basic cyber awareness, digital media skills, generalist IT support services, networking, programming, systems and web development.

Individuals who work in these fields apply broad sets of skills, including foundational knowledge in critical thinking and customer service skills, to support a range of technologies, processes, procedures, policies, people and clients in a variety of work contexts.

Licensing, legislative, regulatory or certification considerations

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil

Packaging Rules

Total number of units = 12

6 core units plus

6 elective units, of which:

- at least 4 units must be selected from the elective units listed below
- up to 2 units may be selected from the remaining listed elective units or from this or any other currently endorsed training package qualification or accredited course at Australian Qualifications Framework (AQF) Level 2, 3 or 4.

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Elective units must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment, and contribute to a valid, industry-supported vocational outcome.

Core units

BSBCRT301 Develop and extend critical and creative thinking skills

BSBXCS303 Securely manage personally identifiable information and workplace information

BSBXTW301 Work in a team

ICTICT313 Identify IP, ethics and privacy policies in ICT environments

ICTPRG302 Apply introductory programming techniques

ICTSAS305 Provide ICT advice to clients

Elective units

Group A Animation

CUAANM301 Create 2D digital animations

CUAANM302 Create 3D digital animations

ICTDMT405 Produce interactive animations

ICTGAM301 Apply simple modelling techniques

ICTGAM302 Design and apply simple textures to digital art

ICTGAM303 Review and apply the principles of animation

Group B Basic Cloud Computing

ICTCLD301 Evaluate characteristics of cloud computing solutions and services

ICTCLD401 Configure cloud services

Group C Basic Cyber Security Awareness

BSBXCS301 Protect own personal online profile from cyber security threats

BSBXCS302 Identify and report online security threats

BSBXCS401 Maintain security of digital devices

BSBXCS402 Promote workplace cyber security awareness and best practices

BSBXCS403 Contribute to cyber security threat assessments

BSBXCS404 Contribute to cyber security risk management

BSBXCS405 Contribute to cyber security incident responses

ICTSAS214 Protect devices from spam and destructive software

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ICTSAS215 Protect and secure information assets

ICTSAS440 Monitor and administer security of ICT systems

Group D Digital Media

CUADIG201 Maintain interactive content

CUADIG301 Prepare video assets

CUADIG302 Author interactive sequences

CUADIG303 Produce and prepare photo images

CUADIG304 Create visual design components

CUAPOS201 Perform basic vision and sound editing

CUASOU202 Perform basic sound editing

Group E Generalist IT Support

BSBITU211 Produce digital text documents

ICTICT219 Interact and resolve queries with ICT clients

ICTICT221 Identify and use specific industry standard technologies

ICTICT222 Research and share ICT solutions for Indigenous users

ICTICT303 Connect internal hardware components

ICTICT310 Identify and use industry specific technologies

ICTSAS212 Record the requirements of client support requests

ICTSAS303 Care for computer hardware

ICTSAS308 Run standard diagnostic tests

ICTSAS309 Maintain and repair ICT equipment and software

Group F IT Work Ready Skills

ICPDMT3460 Incorporate video into multimedia presentations

ICTICT215 Operate digital media technology package

ICTICT216 Design and create basic organisational documents

ICTICT306 Migrate to new technology

ICTICT309 Create ICT user documentation

ICTICT311 Customise packaged software applications

ICTICT312 Use advanced features of applications

ICTPMG301 Contribute as part of an IT project management team

ICTWHS204 Follow work health and safety and environmental policy and procedures

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Group G Networking

ICTNWK307 Provide network systems administration

ICTNWK308 Determine and action network problems

ICTNWK309 Configure and administer network operating systems

ICTNWK310 Administer network peripherals

ICTNWK311 Install and test network protocols

Group H Programming

ICTICT438 Select, configure and deploy software and hardware testing tools

ICTPRG430 Apply introductory object-oriented language skills

ICTPRG435 Write scripts for software applications

Group I Systems

ICTICT213 Use computer operating systems and hardware

ICTICT214 Operate application software packages

ICTICT302 Install and optimise operating system software

ICTICT304 Implement system software changes

ICTSAS210 Update and maintain hardware, software and documentation inventories

ICTSAS211 Develop solutions for basic ICT malfunctions and problems

ICTSAS213 Maintain ICT system integrity

ICTSAS216 Maintain ICT equipment and replace consumables

ICTSAS217 Connect a home based local wireless network

ICTSAS304 Provide basic system administration

ICTSAS310 Install, configure and secure a small office or home office network

Group J Web Development

ICTWEB304 Build simple web pages

ICTWEB305 Produce digital images for the web

ICTWEB306 Develop web presence using social media

ICTWEB431 Create and style simple markup language documents

Qualification Mapping Information

No equivalent qualification. Supersedes and is not equivalent to:

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- ICT30118 Certificate III in Information, Digital Media and Technology.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICT30419 Certificate III in Telecommunications Network Build and Operation

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Qualification Description

This qualification is for telecommunications operators working on the construction and maintenance of high-speed national broadband network (NBN) infrastructure, and on required technology.

Telecommunications technology operators may:

- perform equipment and system installation work on a customer network to enable efficient access and interconnection to the NBN services, including connecting and jointing of copper cable, diagnosing and rectifying copper cable system faults, and migrating, remediating and augmentation of copper services to maximise benefits of the high-speed broadband connection
- splice, test and fault-find on live fibre cable in the NBN fibre distribution network
- perform equipment and system installation work on a customer network to enable efficient access and interconnection to the NBN services, including diagnosing and rectifying fibre system faults, working with active equipment, and performing integration and commissioning activities to maximise benefits of the high-speed broadband connection
- perform underground and aerial equipment and system installations from the tap to the optical node to enable efficient access and interconnection to the NBN services, including connecting and terminating hybrid fibre coaxial (HFC) cabling, diagnosing and rectifying HFC system faults
- install, activate and assure HFC equipment and systems from the last connection point of the network to the customer premises – tap to network termination device (NTD) – to enable efficient access and interconnection to the NBN services.

Licensing/Regulatory Information

Work functions in the occupational areas where this qualification may be used are subject to regulatory requirements. Refer to the ICT Information and Communications Technology Training Package Companion Volume Implementation Guide or the relevant regulator for details of licensing, legislative or certification requirements.

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Cabling at the customer premises downstream of the NTD must be carried out according to requirements of the Australian Communications and Media Authority (ACMA) and relevant industry registration bodies, and in line with the specifications of the access network owner.

Entry Requirements

Nil

Packaging Rules

Total number of units = 14

6 core units, plus

8 elective units

The elective units selected may consist of:

- up to 8 units from Group A Copper Cabling, or Group B Fibre Cabling, and/or Group C HFC Cabling
- up to 5 units from Group D General
- up to 2 units from this or any currently endorsed Training Package or accredited course where the units are packaged in an Australian Qualification Framework (AQF) Level 3 or 4 qualification.

Elective units must be relevant to the work environment and the qualification, maintain the integrity of the AQF alignment and contribute to a valid, industry-supported vocational outcome.

Units selected from other Training Packages or accredited courses must not duplicate units selected from, or available within, the ICT Information and Communications Technology Training Package.

Core units

ICTTEN202 Use hand and power tools

ICTTEN208 Use electrical skills when working with telecommunications networks

ICTTEN315 Determine and apply technologies within a telecommunications system

ICTTEN317 Locate, identify and rectify telecommunications network faults

ICTWHS204 Follow work health and safety and environmental policy and procedures

ICTWOR308 Provide customer service to telecommunications customers

Elective units

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Group A Copper Cabling

ICTCBL254 Joint metallic conductor cable in access network

ICTCBL313 Modify and cutover cable

ICTCBL319 Rearrange large size copper cable

ICTCBL320 Jumper metallic conductor cable in the access network

ICTCBL326 Cut over metallic conductor cable in the access network

ICTCBL332 Locate, identify and rectify copper cable faults

ICTCBL336 Install and cut over metallic conductor cable to access network cabinet

Group B Fibre Cabling

ICTBWN302 Install optical fibre splitters in fibre distribution hubs

ICTBWN309 Perform tests on optical communication system and components

ICTCBL316 Install ribbon fibre cable in the FTTX distribution network*

ICTCBL322 Install, test and terminate optical fibre cable on customer premises

ICTCBL330 Splice and terminate optical fibre cable for telecommunications projects

ICTTEN318 Inspect, clean and handle optical fibre cable and connectors

ICTTEN409 Commission an electronic system

ICTTEN416 Install, configure and test an internet protocol network

Group C HFC Cabling

ICTCBL248 Install and terminate hard-line coaxial cable

ICTCBL251 Install aerial and underground cable lead-ins

ICTCBL303 Install and terminate coaxial cable

ICTCBL306 Locate and identify cable system faults

ICTCBL333 Install aerial cable for communications applications

ICTCBL335 Construct aerial cable supports

ICTDRE303 Install a complex digital reception system

ICTDRE308 Install a cable broadband multi-dwelling unit system

ICTDRE314 Design communications wiring systems for customer premises*

ICTRFN406 Maintain hybrid fibre coaxial broadband cable network

Group D General

BSBSUS201 Participate in environmentally sustainable work practices

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BSBSUS401 Implement and monitor environmentally sustainable work practices

CPCCCM2007 Use explosive power tools*

CPCCDE3014A Remove non-friable asbestos*

CPCCOHS1001A Work safely in the construction industry

CPCCWHS2001 Apply WHS requirements, policies and procedures in the construction industry

CPCPCM2043A Carry out WHS requirements

ICTBWN308 Work safely on live optical fibre installations*

ICTBWN303 Install lead-in module and cable for fibre to the premises

ICTBWN306 Use radio frequency measuring instruments

ICTBWN307 Use optical measuring instruments

HLTAID001 Provide cardiopulmonary resuscitation

ICTCBL246 Install, maintain and modify customer premises communications cabling: ACMA Restricted Rule*

ICTCBL247 Install maintain and modify customer premises communications cabling: ACMA Open Rule*

ICTCBL249 Haul underground cable for installation and maintenance work

ICTCBL254 Joint metallic conductor cable in access network

ICTCBL329 Install underground cable for communications applications

ICTCBL334 Install underground enclosures and conduit

ICTTEN207 Install and test internet protocol devices in convergence networks

ICTTEN310 Remove and replace electronic circuit boards in carrier equipment

ICTTEN312 Install telecommunications network equipment

ICTTEN313 Work on and resolve recurrent network faults

ICTWHS201 Provide telecommunications services safely on roofs

OR

RIIWHS204D Work safely at heights

ICTWHS205 Work safely near power infrastructure at a telecommunications workplace

OR

UETTDREL14A Working safely near live electrical apparatus as a non-electrical worker

ICTWOR202 Work effectively in the digital and telecommunications industry

ICTWOR305 Supervise worksite activities

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RIICCM202D Identify, locate and protect underground services

RIIWHS202D Enter and work in confined spaces

RIIWHS205D Control traffic with stop-slow bat

RIIWHS302D Implement traffic management plan

TLID2010 Operate a forklift

*Note the following prerequisite unit requirements:

Prerequisite unit requirements in this qualification	
Unit in this qualification	**Prerequisite unit**
CPCCCM2007 Use explosive power tools	CPCCWHS2001 Apply WHS requirements, policies and procedures in the construction industry
CPCCDE3014A Remove non-friable asbestos	CPCCOHS1001A Work safely in the construction industry
ICTBWN308 Work safely on live optical fibre installations	ICTBWN307 Use optical measuring instruments ICTWHS204 Follow work health and safety and environmental policy and procedures
ICTCBL246 Install, maintain and modify customer premises communications cabling: ACMA Restricted Rule	ICTTEN208 Use electrical skills when working with telecommunications networks ICTWHS204 Follow work health and safety and environmental policy and procedures
ICTCBL247 Install, maintain and modify customer premises communications cabling: ACMA Open Rule	ICTTEN208 Use electrical skills when working with telecommunications networks ICTWHS204 Follow work health and safety and environmental policy and procedures
ICTCBL316 Install ribbon fibre cable in the FTTX distribution network	ICTCBL330 Splice and terminate optical fibre cable for telecommunications projects
ICTDRE314 Design communications wiring systems for customer premises	ICTCBL247 Install, maintain and modify customer premises communications cabling: ACMA Open Rule

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Specialisations

Where relevant, specialisations can be used for this qualification in:

- copper cable jointer
- fibre splicer
- fibre technician
- HFC technician
- telecommunications customer service technician – HFC technician.

The achievement of a specialisation will be identified on testamurs as follows:

- ICT30419 Certificate III in Telecommunications Network Build and Operation (Copper Cable Jointer)
- ICT30419 Certificate III in Telecommunications Network Build and Operation (Fibre Splicer)
- ICT30419 Certificate III in Telecommunications Network Build and Operation (Fibre Technician)
- ICT30419 Certificate III in Telecommunications Network Build and Operation (HFC Technician)
- ICT30419 Certificate III in Telecommunications Network Build and Operation (Telecommunications Customer Service Technician – HFC Technician).

Copper Cable Jointer

Select the following 6 elective units:

- ICTCBL254 Joint metallic conductor cable in access network
- ICTCBL319 Rearrange large size copper cable
- ICTCBL326 Cut over metallic conductor cable in the access network
- ICTCBL332 Locate, identify and rectify copper cable faults
- ICTCBL336 Install and cut over metallic conductor cable to access network cabinet
- ICTTEN312 Install telecommunications network equipment

Fibre Splicer

Select the following 6 elective units:

- ICTBWN302 Install optical fibre splitters in fibre distribution hubs
- ICTBWN307 Use optical measuring instruments
- ICTBWN308 Work safely on live optical fibre installations*
- ICTCBL316 Install ribbon fibre cable in the FTTX distribution network*
- ICTCBL330 Splice and terminate optical fibre cable for carriers and service projects
- ICTTEN318 Inspect, clean and handle optical fibre cable and connectors

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Technician Fibre

Select the following 7 elective units:

- ICTBWN307 Use optical measuring instruments
- ICTBWN308 Work safely on live optical fibre installations*
- ICTCBL322 Install, test and terminate optical fibre cable on customer premises
- ICTTEN310 Remove and replace electronic circuit boards in carrier equipment
- ICTTEN318 Inspect, clean and handle optical fibre cable and connectors
- ICTTEN409 Commission an electronic system
- ICTTEN416 Install, configure and test an internet protocol network

Technician Hybrid Fibre Coaxial (HFC)

Select the following 5 elective units:

- ICTBWN306 Use radio frequency measuring instruments
- ICTCBL248 Install and terminate hard-line coaxial cable
- ICTCBL333 Install aerial cable for communications applications
- ICTTEN312 Install telecommunications network equipment

Plus

- ICTWHS201 Provide telecommunications services safely on roofs

or

- RIIWHS204D Work safely at heights

Telecommunications Customer Service Technician – HFC Technician

Select the following 8 elective units:

- ICTBWN306 Use radio frequency measuring instruments
- ICTCBL251 Install aerial and underground cable lead-ins
- ICTCBL303 Install and terminate coaxial cable
- ICTCBL306 Locate and identify cable system faults
- ICTDRE308 Install a cable broadband multi-dwelling unit system
- ICTDRE314 Design communications wiring systems for customer premises*
- ICTTEN207 Install and test internet protocol devices in convergence networks
- ICTTEN312 Install telecommunications network equipment

Qualification Mapping Information

No equivalent qualification. Supersedes and is not equivalent to ICT30415 Certificate III in Telecommunications Network Build and Operate.

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Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICT30519 Certificate III in Telecommunications Technology

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Qualification Description

This qualification is for telecommunications technology operators who assess installation requirements, plan and perform installations, test installed equipment, and fault-find when issues arise with installed equipment.

Telecommunications technology operators may work on:

- customer cabling networks
- digital reception technology
- optical networks
- premises cabling
- radio communications
- rigging, which also involves installing and maintaining radio antennas on high structures such as radio towers, and building and mounting sections of radio masts for a complete radio structure
- telecommunications networking
- wireless networks.

Licensing/Regulatory Information

Work functions in the occupational areas where this qualification may be used are subject to regulatory requirements. Refer to the ICT Information and Communications Technology Training Package Companion Volume Implementation Guide or the relevant regulator for details of licensing, legislative or certification requirements.

Cabling at the customer premises must be carried out according to requirements of the Australian Communications and Media Authority (ACMA) and relevant industry registration bodies, in line with the specifications of the access network owner.

High risk work (HRW) licences are required for dogging work and rigging as outlined on the Safe Work Australia website.

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The model WHS Regulations require people performing high risk work to be over 18 years of age and to hold the right HRW licence. HRW licences are issued by state/territory governments: refer to the relevant body to ensure compliance with regulations.

Entry Requirements

Nil

Packaging Rules

Total number of units = 16

6 core units, plus

10 elective units

The elective units selected must consist of:

- at least 1 elective unit from Group A Workplace Technical Practice.

The remaining required elective units selected may consist of:

- up to 2 elective unit from Group B General Workplace
- up to 8 elective units from any of the elective groups with no more than 2 of these units from Group G Work Health and Safety
- up to 3 units from this or any currently endorsed Training Package or accredited course where the units are packaged in an Australian Qualification Framework (AQF) Level 3 or 4 qualification.

Elective units must be relevant to the work environment and the qualification, maintain the integrity of the AQF alignment and contribute to a valid, industry-supported vocational outcome.

Units selected from other Training Packages or accredited courses must not duplicate units selected from, or available within, the ICT Information and Communications Technology Training Package.

Core units

ICTTEN202 Use hand and power tools

ICTTEN208 Use electrical skills when working with telecommunications networks

ICTTEN315 Determine and apply technologies within a telecommunications system

ICTTEN317 Locate, identify and rectify telecommunications network faults

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ICTWHS204 Follow work health and safety and environmental policy and procedures

ICTWOR308 Provide customer service to telecommunications customers

Elective units

Group A Workplace Technical Practice

ICTTEN207 Install and test internet protocol devices in convergence networks

ICTTEN312 Install telecommunications network equipment

ICTTEN313 Work on and resolve recurrent network faults

ICTTEN322 Provide infrastructure for telecommunications network customer equipment

Group B General Workplace

BSBSMB305 Comply with regulatory, taxation and insurance requirements for the micro business

BSBSMB306 Plan a home based business

BSBSUS401 Implement and monitor environmentally sustainable work practises

CPCCBC4004A Identify and produce estimated costs for building and construction projects

ICTEDU301 Train customers in new technology

ICTSAS305 Provide ICT advice to clients

ICTWOR202 Work effectively in the digital and telecommunications industry

ICTWOR301 Organise resources

ICTWOR302 Organise material supply

ICTWOR303 Schedule resources

ICTWOR304 Manage spare parts

ICTWOR305 Supervise worksite activities

ICTWOR306 Resolve technical enquiries using multiple information systems

ICTWOR307 Collect and analyse technical information

Group C Telecommunications Cabling

ICTCBL238 Install, maintain and modify customer premises communications cabling: ACMA Lift Rule

ICTCBL246 Install, maintain and modify customer premises communications cabling: ACMA Restricted Rule*

ICTCBL247 Install, maintain and modify customer premises communications cabling: ACMA Open Rule*

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ICTCBL301 Install, terminate and certify structured cabling installation

ICTCBL303 Install and terminate coaxial cable

ICTCBL305 Hand over cable systems and equipment

ICTCBL306 Locate and identify cable system faults

ICTCBL311 Install systems and equipment on customer premises

ICTCBL313 Modify and cutover cable

ICTCBL314 Install network cable equipment

ICTCBL316 Install ribbon fibre cable in the FTTX distribution network*

ICTCBL322 Install, test and terminate optical fibre cable on customer premises

ICTCBL323 Test cables and systems on customer premises

ICTCBL324 Cut over new systems and equipment on customer premises

ICTCBL325 Maintain cable network

ICTCBL329 Install underground cable for communications applications

ICTCBL330 Splice and terminate optical fibre cable for telecommunications projects

ICTCBL333 Install aerial cable for communications applications

ICTCBL334 Install underground enclosures and conduit

ICTCBL335 Construct aerial cable supports

Group D Digital Reception Technology

ICTDRE301 Install digital reception equipment

ICTDRE302 Locate and rectify digital reception equipment faults

ICTDRE303 Install a complex digital reception system

ICTDRE305 Develop integrated digital reception systems

ICTDRE314 Design communications wiring systems for customer premises*

ICTTEN402 Estimate and quote for customer telecommunications equipment installation

ICTTEN415 Install and configure internet protocol TV in a home network

ICTTEN432 Identify requirements for customer telecommunications equipment

Group E ICT Use

ICTICT302 Install and optimise operating system software

ICTICT303 Connect internal hardware components

ICTICT304 Implement system software changes

ICTICT306 Migrate to new technology

ICTNWK305 Install and manage network protocols

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ICTNWK409 Create scripts for networking

ICTPRG301 Apply introductory programming techniques

ICTSAS303 Care for computer hardware

ICTSAS304 Provide basic system administration

ICTSAS308 Run standard diagnostic tests

Group F Optical Networks

ICTBWN302 Install optical fibre splitters in fibre distribution hubs

ICTBWN303 Install lead-in module and cable for fibre to the premises

ICTBWN307 Use optical measuring instruments

ICTBWN308 Work safely on live optical fibre installations*

ICTBWN309 Perform tests on optical communication system and components

ICTTEN318 Inspect, clean and handle optical fibre cable and connectors

Group G Work Health and Safety

CPCCDE3014A Remove non-friable asbestos*

CPCCOHS1001A Work safely in the construction industry

ICTWHS201 Provide telecommunications services safely on roofs

ICTWHS205 Work safely near power infrastructure at a telecommunications workplace

OR

UETTDREL14A Working safely near live electrical apparatus as a non-electrical worker

RIICCM202D Identify, locate and protect underground services

RIIWHS202D Enter and work in confined spaces

RIIWHS204D Work safely at heights

RIIWHS205D Control traffic with stop-slow bat

RIIWHS302D Implement traffic management plan

Group H Radio Communications

ICTBWN306 Use radio frequency measuring instruments

ICTRFN301 Install a radio communications antenna and feedline

ICTRFN302 Install mobile telecommunications in motor vehicles

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ICTRFN303 Install WiMAX customer premises equipment broadband wireless access equipment

ICTRFN304 Construct and test a radio communications device

ICTRFN305 Operate and maintain radio communications technical instruments and field equipment

ICTRFN406 Maintain hybrid fibre coaxial broadband cable network

ICTRFN407 Conduct radio frequency measurements

Group I Telecommunications Network

ICTCBL331 Conduct basic identification and fault-finding within cabling networks and customer equipment

ICTTEN301 Provide infrastructure for telecommunications network equipment

ICTTEN307 Repair and replace telecommunications network hardware

ICTTEN312 Install telecommunications network equipment

ICTTEN316 Conduct basic tests and analyses of telecommunications copper cabling

ICTTEN319 Recover customer premises equipment

ICTTEN320 Commission an electronic unit

ICTTEN321 Maintain an electronic system

ICTTEN322 Provide infrastructure for telecommunications network customer equipment

ICTTEN416 Install, configure and test an internet protocol network

Group J Telecommunications Rigging

ICTTCR201 Use rigging practices and systems on telecommunications network structures

ICTTCR202 Use operational safety in a telecommunications rigging environment

ICTTCR203 Use safe rigging practices to climb and perform rescues on telecommunications network structures

ICTTCR301 Build a telecommunications radio structure*

ICTTCR302 Install radio plant and equipment on telecommunications structures*

ICTTCR303 Protect against electromagnetic radiation and systems hazards when working on telecomms radio sites

*Note the following prerequisite unit requirements:

Prerequisite unit requirements in this qualification	
Unit in this qualification	**Prerequisite unit**

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Prerequisite unit requirements in this qualification	
Unit in this qualification	**Prerequisite unit**
CPCCDE3014A Remove non-friable asbestos	CPCCOHS1001A Work safely in the construction industry
ICTBWN308 Work safely on live optical fibre installations	ICTBWN307 Use optical measuring instruments ICTWHS204 Follow work health and safety and environmental policy and procedures
ICTCBL246 Install, maintain and modify customer premises communications cabling: ACMA Restricted Rule	ICTTEN208 Use electrical skills when working with telecommunications networks ICTWHS204 Follow work health and safety and environmental policy and procedures
ICTCBL247 Install, maintain and modify customer premises communications cabling: ACMA Open Rule	ICTTEN208 Use electrical skills when working with telecommunications networks ICTWHS204 Follow work health and safety and environmental policy and procedures
ICTCBL316 Install ribbon fibre cable in the FTTX distribution network	ICTCBL330 Splice and terminate optical fibre cable for telecommunications projects
ICTTCR301 Build a telecommunications radio structure	ICTTCR201 Use rigging practices and systems on telecommunications network structures ICTTCR202 Use operational safety in a telecommunications rigging environment ICTTCR203 Use safe rigging practices to climb and perform rescues on telecommunications network structures
ICTTCR302 Install radio plant and equipment on telecommunications structures	ICTTCR201 Use rigging practices and systems on telecommunications network structures ICTTCR202 Use operational safety in a telecommunications rigging environment ICTTCR203 Use safe rigging practices to climb and perform rescues on telecommunications network structures
ICTDRE314 Design communications wiring systems for customer premises	ICTCBL247 Install, maintain and modify customer premises communications cabling: ACMA Open Rule

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Specialisations

Where relevant, specialisations can be used for this qualification in:

- digital reception technology
- optical networks
- radio communications
- telecommunications cabling
- telecommunications networks
- telecommunications rigging
- wireless networks.

The achievement of a specialisation will be identified on testamurs as follows:

- ICT30519 Certificate III in Telecommunications Technology (Digital Reception Technology)
- ICT30519 Certificate III in Telecommunications Technology (Optical Networks)
- ICT30519 Certificate III in Telecommunications Technology (Radio Communications)
- ICT30519 Certificate III in Telecommunications Technology (Telecommunications Cabling)
- ICT30519 Certificate III in Telecommunications Technology (Telecommunications Networks)
- ICT30519 Certificate III in Telecommunications Technology (Telecommunications Rigging)
- ICT30519 Certificate III in Telecommunications Technology (Wireless Networks).

Digital Reception Technology

Select the following 6 elective units from Group D Digital Reception Technology:

- ICTDRE301 Install digital reception equipment
- ICTDRE303 Install a complex digital reception system
- ICTDRE305 Develop integrated digital reception systems
- ICTDRE401 Integrate customer digital reception equipment
- ICTDRE402 Integrate data delivery modes
- ICTRFN407 Conduct radio frequency measurements

Optical Networks

Select the following 5 elective units from Group F Optical Networks:

- ICTBWN302 Install optical fibre splitters in fibre distribution hubs
- ICTBWN303 Install lead-in module and cable for fibre to the premises
- ICTBWN307 Use optical measuring instruments
- ICTBWN308 Work safely on live optical fibre installations*
- ICTBWN309 Perform tests on optical communication system and components

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Radio Communications

Select at least 4 elective units from Group H Radio Communications.

Telecommunications Cabling

Select the following 4 elective units from Group C Telecommunications Cabling:

- ICTCBL247 Install, maintain and modify customer premises communications cabling: ACMA Open Rule*
- ICTCBL301 Install, terminate and certify structured cabling installation
- ICTCBL303 Install and terminate coaxial cable
- ICTCBL322 Install, test and terminate optical fibre cable on customer premises

Telecommunications Networking

Select the following 3 elective units from Group A Workplace Technical:

- ICTTEN312 Install telecommunications network equipment
- ICTTEN313 Work on and resolve recurrent network faults
- ICTTEN322 Provide infrastructure for telecommunications network customer equipment

Telecommunications Rigging

Select the 3 elective units in Group J Telecommunications Rigging.

Wireless Networks

Select the following 4 elective units from Group H Radio Communications:

- ICTRFN301 Install a radio communications antenna and feedline
- ICTRFN303 Install WiMAX customer premises equipment broadband wireless access equipment
- ICTRFN305 Operate and maintain radio communications technical instruments and field equipment
- ICTRFN407 Conduct radio frequency measurements

Qualification Mapping Information

No equivalent qualification. Supersedes and is not equivalent to ICT30515 Certificate III in Telecommunications Technology.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICT40120 Certificate IV in Information Technology

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.
Release 2	Correcting an error and adding the following elective units of comptency: • ICTICT425 Implement WHS, environmental sustainability and anti-discrimination practices in an ICT workplace • ICTICT427 Identify, evaluate and apply current industry-specific technologies to meet organisational needs • ICTSAS422 Scope implementation requirements.

Qualification Description

This qualification reflects the role of individuals who are job ready and competent in a wide range of information and communications technology (ICT) roles and apply a broad range of skills in varied work contexts, using problem solving skills and effective communication with others.

The skills required for these roles may include, but are not restricted to:

- database development: interpreting specifications, technical designs and flow charts, modifying software applications, constructing technical specifications from models and testing, and writing technical documents
- database maintenance: managing, cleaning, storing and verifying organisational data, and evaluating compliance with internal and external data ethics regulations and legislation
- gaming development: creating 2D and 3D modelling and animation software through scripts and storyboards
- networking: installing, configuring and testing networks and servers in organisations
- programming: building, testing and applying basic object-oriented language skills, user interfaces and software developments
- systems administration support: implementing maintenance procedures and support to help troubleshoot system applications
- web development: designing website layouts through textual and visual content transfer, search engine optimisation and simple markup language documents.

Licensing, legislative, regulatory or certification considerations

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No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil

Packaging Rules

Total number of units = 20

7 core units plus

13 elective units, of which:

- at least 9 units must be selected from the elective units listed below
- up to 4 units may be selected from the remaining listed elective units or from this or any other currently endorsed training package qualification or accredited course at Australian Qualifications Framework (AQF) Level 3, 4 or 5.

Elective units must be relevant to the work environment and the qualification, maintain the overall integrity of the AQF alignment and contribute to a valid, industry-supported vocational outcome.

Units selected from other Training Packages or accredited courses must not duplicate units selected from or available within the ICT Information and Communications Technology Training Package.

Where relevant, the choice of elective units set out in the packaging rules above can serve to provide the qualification with one or more of the following specialisations. The rules to achieve a specialisation are detailed at the qualification end.

- Database development
- Database maintenance
- Gaming development
- Networking
- Programming
- Systems administration support
- Web development

Core units

BSBCRT404 Apply advanced critical thinking to work processes

BSBXCS404 Contribute to cyber security risk management

ICTICT426 Identify and evaluate emerging technologies and practices

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ICTICT443 Work collaboratively in the ICT industry

ICTICT451 Comply with IP, ethics and privacy policies in ICT environments

ICTPRG302 Apply introductory programming techniques

ICTSAS432 Identify and resolve client ICT problems

Elective units

Group A Database Development Specialisation

ICTDBS407 Monitor physical database implementation

ICTDBS413 Determine database requirements

ICTDBS415 Build a database

ICTDBS416 Create basic relational databases

ICTDBS418 Monitor and administer databases

Group B Database Maintenance Specialisation

ICTDAT401 Evaluate organisational compliance with data ethics legislation

ICTDAT402 Clean and verify data

ICTDBS414 Complete database backup and restore

ICTDBS417 Identify and resolve common database performance problems

ICTPRG554 Manage data persistence using noSQL data stores

Group C Gaming Development Specialisation

ICTGAM418 Use simple modelling for animation

ICTGAM420 Produce interactive games

ICTGAM421 Identify and apply games design and game play principles

ICTGAM426 Write narrative scripts for interactive games

ICTGAM427 Use 3-D software interface and toolsets

ICTICT433 Build graphical user interfaces

Group D Networking Specialisation

ICTNWK420 Install and configure virtual machines

ICTNWK421 Install, configure and test network security

ICTNWK422 Install and manage servers

ICTNWK423 Manage network and data integrity

ICTNWK424 Install and operate small enterprise branch networks

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ICTNWK429 Install hardware to networks

ICTTEN434 Install, configure and test internet protocol networks

Group E Programming Specialisation

ICTICT449 Use version control systems in development environments

ICTPRG430 Apply introductory object-oriented language skills

ICTPRG433 Test software developments

ICTPRG437 Build a user interface

ICTPRG440 Apply introductory programming skills in different languages

Group F Systems Administration Support Specialisation

ICTICT445 Connect and configure devices and hardware components

ICTSAS436 Evaluate ICT system status

ICTSAS438 Implement maintenance procedures

ICTSAS441 Support ICT system software

ICTSAS442 Provide first-level remote help desk support

ICTSAS443 Support operating system users and troubleshoot applications

Group G Web Development Specialisation

ICTWEB431 Create and style simple markup language documents

ICTWEB432 Design website layouts

ICTWEB433 Confirm accessibility of websites

ICTWEB434 Transfer content to websites

ICTWEB443 Implement search engine optimisations

ICTWEB450 Evaluate and select a web hosting service

ICTWEB452 Create a markup language document

Group H General electives

Cloud Computing

ICTCLD301 Evaluate characteristics of cloud computing solutions and services

ICTCLD401 Configure cloud services

ICTICT428 Select cloud storage solutions

Cyber Security Incident Response

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ICTCYS401 Design and implement network security infrastructure for an organisation
ICTCYS402 Identify and confirm cyber security incidents
ICTCYS403 Plan and implement information security strategies for an organisation
ICTCYS404 Run vulnerability test assessments for an organisation
ICTCYS405 Develop cyber security incident response plans
ICTCYS406 Respond to cyber security incidents
ICTCYS407 Gather, analyse and interpret threat data
ICTICT424 Address cyber security requirements
ICTSAS214 Protect devices from spam and destructive software
ICTSAS440 Monitor and administer security of ICT systems

Data and Information Management

ICTDBS503 Create a data warehouse
ICTICT450 Identify and use applications for distributed ledgers
ICTPRG438 Configure and maintain databases
ICTSAS215 Protect and secure information assets

Digital Media

CUAANM402 Create digital visual effects
CUACAM301 Shoot material for screen productions
CUADIG401 Author interactive media
CUAPOS401 Edit screen content for fast turnaround
CUAPOS402 Manage media assets
CUAPPM407 Create storyboards
CUASOU202 Perform basic sound editing
CUASOU304 Prepare audio assets
ICTDMT404 Create visual design components for digital media
ICTDMT405 Produce interactive animations
ICTDMT406 Produce and edit digital images

Gaming Art and Development

ICTGAM422 Create design documents for interactive games
ICTGAM423 Apply artificial intelligence in game development
ICTGAM424 Develop story and content in digital games

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ICTGAM425 Create visual design components in interactive games

ICTGAM428 Create 3-D characters for interactive games

ICTGAM429 Develop 3-D components for interactive games

ICTGAM430 Design interactive media

ICTGAM431 Design and create 3-D digital models

ICTGAM432 Create audio for digital games

ICTGAM433 Prepare and complete image rendering processes

IT Support Services

ICTICT425 Implement WHS, environmental sustainability and anti-discrimination practices in an ICT workplace

ICTICT427 Identify, evaluate and apply current industry-specific technologies to meet organisational needs

ICTICT429 Determine and confirm client business requirements

ICTICT431 Use online tools for learning

ICTICT436 Develop macros and templates for clients using standard products

ICTICT441 Provide one-to-one instruction

ICTICT446 Apply ICT service management principles

ICTSAS428 Hand over ICT system components to clients

ICTSAS433 Update ICT client support procedures and assist with policy development

ICTSAS434 Action change requests and present updated ICT system to clients

ICTSAS446 Fault find and troubleshoot ICT equipment, hardware and software problems

IT Work Ready Skills

BSBWOR404 Develop work priorities

ICTICT435 Create technical documentation

ICTICT440 Develop service level agreements

ICTICT448 Prepare electronic portfolios of work

ICTSAD402 Develop and present ICT feasibility reports

Networking

ICTCLD301 Evaluate characteristics of cloud computing solutions and services

ICTNWK416 Build security into virtual private networks

ICTNWK425 Build small wireless local area networks

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ICTNWK426 Install and configure client-server applications and services

ICTNWK427 Configure desktop environments

ICTNWK428 Create scripts for networking

ICTNWK430 Deploy software to networked computers

ICTNWK431 Create network documentation

ICTNWK432 Build an enterprise wireless network

ICTNWK433 Install backbone technologies in a local area network

Project Management

ICTICT447 Work effectively in agile environments

ICTPMG411 Support small scale ICT projects

Programming

ICTPRG429 Maintain open-source code programs

ICTPRG431 Apply query language in relational databases

ICTPRG432 Develop data-driven applications

ICTPRG434 Automate processes

ICTPRG435 Write scripts for software applications

ICTPRG436 Develop mobile applications

ICTPRG439 Use pre-existing components

ICTPRG441 Apply skills in object-oriented design

ICTPRG442 Apply mathematical techniques for software development

ICTPRG443 Apply intermediate programming skills in different languages

ICTPRG444 Analyse software requirements

ICTPRG446 Prepare software development review

ICTPRG447 Use extensible markup language

ICTSAD501 Model data objects

ICTSAD502 Model data processes

Systems and Software Design

ICTICT430 Apply software development methodologies

ICTICT432 Develop detailed technical design

ICTICT438 Select, configure and deploy software and hardware testing tools

ICTICT444 Develop client user interface

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ICTNWK434 Identify and implement industry standard virtualisation technologies
ICTSAS445 Configure and troubleshoot operating system software
ICTTEN410 Locate, diagnose and rectify faults
ICTTEN417 Install, configure and test a router
ICTTEN418 Install and test a radio frequency identification system
ICTTEN419 Implement and troubleshoot enterprise routers and switches
ICTTEN420 Design, install and configure an internetwork
ICTTEN513 Install, configure and test a local area network switch

Systems Development and Maintenance

ICTICT434 Maintain website information standards
ICTICT437 Conduct post-implementation ICT system reviews
ICTSAS309 Maintain and repair ICT equipment and software
ICTSAS422 Scope implementation requirements
ICTSAS435 Resolve system faults on a live system
ICTSAS437 Optimise ICT system performance
ICTSAS439 Analyse ICT system capacity and implement enhancements
ICTSAS444 Repair operating systems boot up procedures
ICTSUS402 Install and test power saving hardware
ICTSUS403 Install and test power management software
ICTSUS404 Install thin client applications for power over ethernet

Web design and development

ICTWEB423 Ensure dynamic website security
ICTWEB430 Produce server-side script for dynamic web pages
ICTWEB435 Maintain website performance
ICTWEB436 Monitor traffic and compile website traffic reports
ICTWEB437 Create website testing procedures
ICTWEB438 Conduct operational acceptance tests of websites
ICTWEB439 Confirm basic website security
ICTWEB440 Use web authoring tools
ICTWEB441 Produce basic client-side script
ICTWEB442 Produce interactive web animation
ICTWEB444 Create responsive website layouts

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ICTWEB445 Implement content management systems

ICTWEB446 Integrate social web technologies

ICTWEB447 Build basic website using development software and ICT tools

ICTWEB448 Confirm website content meets technical protocols and standards

ICTWEB449 Confirm website access and useability

ICTWEB451 Apply structured query language in relational databases

Specialisations

As stated above, where relevant, the choice of elective units set out in the packaging rules at qualification outset can serve to provide the qualification with one or more of the following specialisations. The rules to achieve a specialisation are detailed below.

The achievement of more than one specialisation may be indicated on the same testamur as follows:

- ICT40120 Certificate IV in Information Technology (Database Development)
- ICT40120 Certificate IV in Information Technology (Database Maintenance)
- ICT40120 Certificate IV in Information Technology (Gaming Development)
- ICT40120 Certificate IV in Information Technology (Networking)
- ICT40120 Certificate IV in Information Technology (Programming)
- ICT40120 Certificate IV in Information Technology (Systems Administration Support)
- ICT40120 Certificate IV in Information Technology (Web Development).

Packaging rules to achieve a specialisation

Database Development

- Select all 5 elective units from Group A Database Development Specialisation

Database Maintenance

- Select all 5 elective units from Group B Database Maintenance Specialisation

Gaming Development

- Select all 6 elective units from Group C Gaming Development Specialisation

Networking

- Select all 7 elective units from Group D Networking Specialisation

Programming

- Select all 5 elective units from Group E Programming Specialisation

Systems Administration Support

- Select all 6 elective units from Group F Systems Administration Support Specialisation

Web Development

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- Select all 7 elective units from Group G Web Development Specialisation

Qualification Mapping Information

No equivalent qualification. Supersedes and is not equivalent to:

- ICT40118 Certificate IV in Information Technology
- ICT40215 Certificate IV in Information Technology Support
- ICT40315 Certificate IV in Web-Based Technologies
- ICT40418 Certificate IV in Information Technology Networking
- ICT40518 Certificate IV in Programming
- ICT40815 Certificate IV in Digital Media Technologies
- ICT40915 Certificate IV in Digital and Interactive Games
- ICT41015 Certificate IV in Computer Systems Technology.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICT41119 Certificate IV in Telecommunications Network Design

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Qualification Description

This qualification reflects the role of a technician with a range of telecommunications skills and extensive knowledge of the access, building and core networks, and client capabilities of the service provider. It prepares people to work in telecommunications infrastructure network design, for network additions and implementations to accommodate network growth and new technologies within the industry.

Graduates with this qualification will be able to design:

- the customer access network
- the building network
- the core network for the service provider and asset owner
- carrier equipment infrastructure.

Licensing/Regulatory Information

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Information and Communications Technology Companion Volume Implementation Guide or the relevant regulator for details of licencing, legislative or certification requirements.

Entry Requirements

Entry into this qualification requires:

- a qualification at AQF level 2 or 3 in telecommunications from the ICT Information and Communications Technology Training Package or the ICT10 Integrated Telecommunications Training Package and certified evidence of at least 700 hours of work experience within the related scope of this qualification, which may have occurred concurrent with or after the qualification was achieved

or

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- a qualification at AQF level 2 or 3 in electrotechnology from the UEE Electrotechnology Training Package and certified evidence of at least 700 hours of work experience within the related scope of this qualification, which may have occurred concurrent with or after the qualification was achieved

or

- a current unrestricted electrical licence from any Australian state or territory electrical regulator

or

- a qualification at AQF level 2 or 3 in telecommunications from the ICT Information and Communications Technology Training Package or the ICT10 Integrated Telecommunications Training Package and enrolment in this Certificate IV as part of a traineeship or apprenticeship program or concurrently employed within the ICT industry

or

- open registration as an ACMA registered cabler with certified evidence of at least 2100 hours of work experience within customer premises doing cabling or telecommunications carrier work.

Packaging Rules

Total number of units = 16

6 core units, plus

10 elective units

The elective units selected must consist of:

- up to 1 elective unit from Group A Workplace
- at least 4 elective units from Groups B Design and D Network Planning.

The remaining required elective units selected may consist of:

- up to 3 elective units from Groups C ICT Use, E Optical Networks, F Project Management, G Radio Communications, H Sustainability or I Network Engineering
- up to 4 elective units from this or any currently endorsed Training Package or accredited course where the units are packaged in an Australian Qualifications Framework (AQF) Level 4 or above qualification.

Elective units must be relevant to the work environment and the qualification, maintain the integrity of the AQF alignment and contribute to a valid, industry-supported vocational outcome.

Units selected from other Training Packages or accredited courses must not duplicate units selected from, or available within, the ICT Information and Communications Technology Training Package.

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Core units

ICTICT408 Create technical documentation

ICTNPL409 Apply knowledge of regulation and legislation for the telecommunications industry

ICTTEN426 Design network projects

ICTTEN427 Conduct site surveys to identify carrier installation requirements

ICTTEN428 Prepare design drawings and specification for telecommunications installations

ICTTEN429 Estimate and quote for carrier telecommunications equipment installations

Elective units

Group A Workplace

BSBLDR402 Lead effective workplace relationships

BSBMGT401 Show leadership in the workplace

BSBSMB407 Manage a small team

ICTICT401 Determine and confirm client business requirements

ICTSMB401 Set up and operate a contractor business

ICTSMB402 Operate a contractor business with employees

ICTWOR401 Undertake a civil site survey

Group B Design

BSBDES401 Generate design solutions

BSBDES402 Interpret and respond to a design brief

BSBDES403 Develop and extend design skills and practice

BSBDES501 Implement design solutions

BSBDES502 Establish, negotiate and refine a design brief

Group C ICT Use

ICTICT405 Develop detailed technical design

ICTICT428 Select cloud storage solutions

ICTNWK409 Create scripts for networking

ICTNWK419 Identify and use current virtualisation technologies

ICTPRG301 Apply introductory programming techniques

ICTPRG430 Apply introductory object-oriented language skills

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Group D Network Planning

ICTNPL401 Apply business acumen to network planning

ICTNPL402 Plan the deployment of access network architectures

ICTNPL403 Evaluate the capability of access networks

ICTNPL404 Evaluate the planning requirements for provisioning a telecommunications building facility

ICTNPL405 Develop provisioning of telecommunications building works project

ICTNPL406 Evaluate core network architectures

ICTNPL407 Plan the deployment of core network

ICTNPL408 Produce planning specifications for end-to-end service delivery

ICTNPL410 Plan the telecommunications access network for an estate

ICTNPL411 Apply compliance requirements to telecommunications work

ICTRFN502 Test and measure cellular phone and network equipment performance

Group E Optical Networks

ICTBWN307 Use optical measuring instruments

ICTOPN403 Prepare activity plans and specifications for a fibre to the x installation

ICTOPN405 Install and test a dense wavelength division multiplexing system

Group F Project Management

ICTPMG402 Schedule installation of customer premises equipment

ICTPMG403 Manage the delivery of network infrastructure

ICTPMG503 Prepare a project brief

Group G Radio Communications

ICTBWN306 Use radio frequency measuring instruments

ICTRFN402 Select antenna system for radio communications

ICTRFN404 Undertake radio communications signals monitoring

ICTRFN406 Maintain hybrid fibre coaxial broadband cable network

ICTRFN407 Conduct radio frequency measurements

Group H Sustainability

BSBSUS401 Implement and monitor environmentally sustainable work practices

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BSBSUS402 Implement an environmental management plan

Group I Network Engineering

ICTBWN308 Work safely on live optical fibre installations*

ICTTEN208 Use electrical skills when working with telecommunications networks

ICTTEN402 Estimate and quote for customer telecommunications equipment installation

ICTTEN403 Assign a transmission path

ICTTEN406 Effect changes to existing customer premises equipment systems and equipment

ICTTEN407 Cut over customer premises equipment major upgrades

ICTTEN416 Install, configure and test an internet protocol network

ICTTEN417 Install, configure and test a router

ICTTEN420 Design, install and configure an internetwork

ICTTEN421 Apply advanced routing protocols to network design

ICTTEN425 Design, install and configure a customer smart technology network

ICTTEN430 Design infrastructure for telecommunications network installations

ICTTEN431 Design a dense wavelength division multiplexing system

ICTTEN432 Identify requirements for customer telecommunications equipment

ICTTEN435 Solve electrical-based telecommunications circuitry and cabling problems*

*Note the following prerequisite unit requirements:

Prerequisite unit requirements in this qualification	
Unit in this qualification	**Prerequisite unit**
ICTBWN308 Work safely on live optical fibre installations	ICTBWN307 Use optical measuring instruments ICTWHS204 Follow work health and safety and environmental policy and procedures
ICTTEN435 Solve electrical-based telecommunications circuitry and cabling problems	ICTTEN208 Use electrical skills when working with telecommunications networks

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Qualification Mapping Information

No equivalent qualification. Supersedes and is not equivalent to ICT41115 Certificate IV in Telecommunications Network Design.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICT41219 Certificate IV in Telecommunications Engineering Technology

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Qualification Description

This qualification reflects the role of an advanced technician (technical officer), team leader or supervisor with a wide range of telecommunications skills. The skills required for this role may include, but are not restricted to, the ability to install and maintain:

- enterprise networks in emerging and converging technologies
- optical and wireless equipment for high speed broadband network infrastructure
- internet protocol (IP) based network telecommunications equipment
- IP based networks in home networks and small and medium enterprises
- telecommunications, data cabling and cabling products in line with the specifications of the access network owner
- telecommunications access network cabling and infrastructure, systems and customer equipment.

The qualification enables technicians to assess installation requirements of converging voice, video and data IP networks, plan and perform installations and test installed equipment and fault find.

Licensing/Regulatory Information

Work functions in the occupational areas where this qualification may be used are subject to regulatory requirements. Refer to the ICT Information and Communications Technology Training Package Companion Volume Implementation Guide or the relevant regulator for details of licensing, legislative or certification requirements.

Entry Requirements

Entry into this qualification requires:

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- a qualification at AQF level 2 or 3 in telecommunications from the ICT Information and Communications Technology Training Package or the ICT10 Integrated Telecommunications Training Package and certified evidence of at least 700 hours of work experience within the related scope of the qualification, which may have occurred concurrent with or after the qualification was achieved

or

- a qualification at AQF level 2 or 3 in electrotechnology from the UEE Electrotechnology Training Package and certified evidence of at least 700 hours of work experience within the related scope of the qualification, which may have occurred concurrent with or after the qualification was achieved

or

- a current unrestricted electrical licence from any Australian State or Territory electrical regulator

or

- a qualification at AQF level 2 or 3 in telecommunications from the ICT Information and Communications Technology Training Package and enrolment in the ICT41219 Certificate IV in Telecommunications Engineering Technology as part of a traineeship or apprenticeship program or concurrently employed within the ICT industry

or

- open registration as an ACMA registered cabler with certified evidence of at least 2100 hours of work experience within the customer premises doing cabling or telecommunications carrier work.

Packaging Rules

Total number of units = 17

5 core units, plus

12 elective units

The elective units selected may consist of:

- up to 1 elective unit from Group A Workplace
- up to 12 elective units from Groups B General, C IT Use, D Network Engineering, and E Radio Communications
- up to 4 elective units from this and any currently endorsed Training Package or accredited course where the units are packaged in an Australian Qualification Framework (AQF) Level 4 or above qualification.

Elective units must be relevant to the work environment and the qualification, maintain the integrity of the AQF alignment and contribute to a valid, industry-supported vocational outcome.

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Units selected from other Training Packages or accredited courses must not duplicate units selected from or available within the ICT Information and Communications Technology Training Package.

Core units

ICTTEN208 Use electrical skills when working with telecommunications networks

ICTTEN410 Locate, diagnose and rectify faults

ICTTEN414 Repair telecommunication system faults

ICTTEN416 Install, configure and test an internet protocol network

ICTTEN435 Solve electrical-based telecommunications circuitry and cabling problems*

Elective units

Group A Workplace

BSBCUS402 Address customer needs

BSBSMB401 Establish legal and risk management requirements of small business

BSBSMB405 Monitor and manage small business operations

BSBSMB407 Manage a small team

ICTCBL403 Supervise cabling project

ICTICT401 Determine and confirm client business requirements

ICTSMB401 Set up and operate a contractor business

ICTSMB402 Operate a contractor business with employees

ICTTEN402 Estimate and quote for customer telecommunications equipment installation

Group B General

BSBSUS401 Implement and monitor environmentally sustainable work practices

BSBSUS402 Implement an environmental management plan

ICTCBL402 Schedule and supply cabling installation

ICTCBL405 Remotely locate and identify cable network faults

ICTDRE302 Locate and rectify digital reception equipment faults

ICTEDU301 Train customers in new technology

ICTICT408 Create technical documentation

ICTNWK410 Install hardware to a network

ICTOPN403 Prepare activity plans and specifications for a fibre to the x installation

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ICTOPN404 Test optical communications systems and components

ICTOPN405 Install and test a dense wavelength division multiplexing system

ICTPMG402 Schedule installation of customer premises equipment

ICTRFN406 Maintain hybrid fibre coaxial broadband cable network

ICTSUS402 Install and test power saving hardware

ICTSUS404 Install thin client applications for power over ethernet

ICTTEN403 Assign a transmission path

ICTTEN404 Install and configure a wireless mesh network

ICTTEN406 Effect changes to existing customer premises equipment systems and equipment

ICTTEN407 Cut over customer premises equipment major upgrades

ICTTEN408 Complete equipment and software upgrades

ICTTEN409 Commission an electronic system

ICTTEN412 Undertake routine maintenance of the telecommunications network

ICTTEN413 Undertake remote diagnosis and repair of network faults

ICTTEN415 Install and configure internet protocol TV in a home network

ICTTEN417 Install, configure and test a router

ICTTEN419 Implement and troubleshoot enterprise routers and switches

ICTTEN424 Install and configure internet protocol TV in a service provider network

ICTTEN425 Design, install and configure a customer smart technology network

ICTTEN432 Identify requirements for customer telecommunications equipment

ICTTEN433 Install configuration programs on PC based customer equipment

Group C IT Use

ICTICT428 Select cloud storage solutions

ICTNWK409 Create scripts for networking

ICTNWK419 Identify and use current virtualisation technologies

ICTPRG301 Apply introductory programming techniques

ICTPRG430 Apply introductory object-oriented language skills

Group D Network Engineering

ICTCBL401 Prepare design drawings and specification for a cable installation

ICTCBL404 Test cable bearers

ICTDRE401 Integrate customer digital reception equipment

ICTDRE402 Integrate data delivery modes

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ICTICT405 Develop detailed technical design

ICTNWK411 Deploy software to networked computers

ICTNWK416 Build security into virtual private networks

ICTNWK417 Build an enterprise wireless network

ICTNWK421 Install, configure and test network security

ICTPMG403 Manage the delivery of network infrastructure

ICTSUS403 Install and test power management software

ICTTEN301 Provide infrastructure for telecommunications network equipment

ICTTEN312 Install telecommunications network equipment

ICTTEN321 Maintain an electronic system

ICTTEN411 Monitor, analyse and action telecommunications network alarms

ICTTEN420 Design, install and configure an internetwork

ICTTEN421 Apply advanced routing protocols to network design

ICTTEN422 Configure and troubleshoot advanced network switching

ICTTEN423 Install and maintain a wide area network

ICTTEN514 Install, configure and test a server

Group E Radio Communications

ICTCMP501 Undertake radio communications site audit

ICTRFN301 Install a radio communications antenna and feedline

ICTRFN303 Install WiMAX customer premises equipment broadband wireless access equipment

ICTRFN304 Construct and test a radio communications device

ICTRFN305 Operate and maintain radio communications technical instruments and field equipment

ICTRFN402 Select antenna system for radio communications

ICTRFN403 Test and repair cellular network equipment

ICTRFN404 Undertake radio communications signals monitoring

ICTRFN405 Install radio communications base station equipment

ICTRFN502 Test and measure cellular phone and network equipment performance

ICTRFN407 Conduct radio frequency measurements

ICTTEN418 Install and test a radio frequency identification system

ICTWOR401 Undertake a civil site survey

ICTWOR402 Schedule equipment maintenance

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*Note the following prerequisite unit requirements:

Prerequisite unit requirements in this qualification	
Unit in this qualification	**Prerequisite unit**
ICTTEN435 Solve electrical-based telecommunications circuitry and cabling problems	ICTTEN208 Use electrical when working with telecommunications networks

Specialisations

Where relevant, specialisations can be used for this qualification in:

- network engineering
- optical networks
- radio communications
- smart device installation
- telecommunications network technician – hybrid fibre coaxial.

The achievement of a specialisation will be identified on testamurs as follows:

- ICT41219 Certificate IV in Telecommunications Engineering Technology (Network Engineering)
- ICT41219 Certificate IV in Telecommunications Engineering Technology (Optical Networks)
- ICT41219 Certificate IV in Telecommunications Engineering Technology (Radio Communications)
- ICT41219 Certificate IV in Telecommunications Engineering Technology (Smart Device Installation)
- ICT41219 Certificate IV in Telecommunications Engineering Technology (Telecommunications Network Technician – Hybrid Fibre Coaxial).

Network Engineering

Select 7 elective units from Group D Network Engineering.

Optical Networks

Select the following 3 elective units from Group B General:

- ICTOPN403 Prepare activity plans and specifications for a fibre to the x installation
- ICTOPN404 Test optical communications systems and components
- ICTOPN405 Install and test a dense wavelength division multiplexing system

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Radio Communications

Select the following 5 elective units:

- ICTRFN301 Install a radio communications antenna and feedline
- ICTRFN304 Construct and test a radio communications device
- ICTRFN402 Select antenna system for radio communications
- ICTRFN407 Conduct radio frequency measurements
- ICTTEN312 Install telecommunications network equipment

Smart Device Installation

Select the following 6 elective units:

- ICTDRE302 Locate and rectify digital reception equipment faults
- ICTEDU301 Train customers in new technology
- ICTICT428 Select cloud storage solutions
- ICTRFN407 Conduct radio frequency measurements
- ICTTEN415 Install and configure internet protocol TV in a home network
- ICTTEN425 Design, install and configure a customer smart technology network

Telecommunication Network Technician – Hybrid Fibre Coaxial

Select the following 6 elective units:

- ICTRFN406 Maintain hybrid fibre coaxial broadband cable network
- ICTRFN407 Conduct radio frequency measurements
- ICTTEN208 Use electrical skills when working with telecommunications networks
- ICTTEN312 Install telecommunications network equipment
- ICTTEN409 Commission an electronic system
- ICTTEN410 Locate, diagnose and rectify faults

Qualification Mapping Information

No equivalent qualification. Supersedes and is not equivalent to ICT41215 Certificate IV in Telecommunications Engineering Technology.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICT50120 Diploma of Information Technology

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.
Release 2	Adding the following elective units of comptency: • ICTNWK515 Develop configuration management protocols • ICTPRG509 Build using rapid application development • ICTSAS521 Perform integration tests • ICTSAS523 Perform stress and load tests on integrated platforms.

Qualification Description

This qualification reflects the role of individuals in a variety of information and communications technology (ICT) roles who have established specialised skills in a technical ICT function.

Individuals in these roles carry out moderately complex tasks in specialist fields, working independently, as part of a team or leading deliverables with others. They may apply their skills across a wide range of industries, business functions and departments, or as a business owner (sole trader/contractor).

The skills required for these roles may include, but are not restricted to:

- advanced networking: configuring and managing virtual computing environments, and security within ICT networks
- advanced programming: applying intermediate and advanced programming skills, managing data and building advanced user interfaces to manage organisational requirements
- back end web development: developing and maintaining website information architecture and data
- business analysis: designing and implementing technical requirements, quality assurance processes and contingency plans for businesses
- cloud architecture: developing, improving and designing cloud infrastructure, including disaster recovery plans
- cloud engineering: building, implementing and managing cloud infrastructure and virtual networks
- cyber security: protecting sensitive data and information through security architecture and developing disaster recovery and contingency plans

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- database and data management: creating, designing and monitoring systems that store data and optimise organisational knowledge management
- front end web development: designing dynamic and complex websites, user experience solutions and documents using extensible mark-up languages
- game art and design: creating complex 2D and 3D modelling and animation software through scripts and storyboards
- game programming: creating complex 2D and 3D interactive games and media, building graphical user interfaces and applying artificial intelligence in game development
- systems administration: reviewing maintenance procedures and support to help troubleshoot system applications
- systems analysis: modelling and testing data objects, data processes and preferred ICT system solutions.

Licensing, legislative, regulatory or certification considerations

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil

Packaging Rules

Total number of units = 20

6 core units plus

14 elective units, of which:

- at least 10 units must be selected from the elective units listed below
- up to 4 units may be selected from the remaining listed elective units or from this or any currently endorsed Training Package or accredited course where the units are packaged in an Australian Qualification Framework (AQF) Level 4, 5 or 6 qualification.

Elective units must be relevant to the work environment and the qualification, maintain the integrity of the AQF alignment and contribute to a valid, industry-supported vocational outcome.

Units selected from other Training Packages or accredited courses must not duplicate units selected from or available within the ICT Information and Communications Technology Training Package.

Where relevant, the choice of elective units set out in the packaging rules above can serve to provide the qualification with one or more of the following specialisations. The rules to achieve a specialisation are detailed at the qualification end.

- Advanced networking

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- Advanced programming
- Back end web development
- Business analysis
- Cloud architecture
- Cloud engineering
- Cyber security
- Database and data management
- Front end web development
- Game art and design
- Game programming
- Systems administration
- Systems analysis

Core units

BSBCRT501 Originate and develop concepts

BSBXCS402 Promote workplace cyber security awareness and best practices

BSBXTW401 Lead and facilitate a team

ICTICT517 Match ICT needs with the strategic direction of the organisation

ICTICT532 Apply IP, ethics and privacy policies in ICT environments

ICTSAS527 Manage client problems

Elective units

Group A Advanced Networking Specialisation

ICTNWK529 Install and manage complex ICT networks

ICTNWK536 Plan, implement and test enterprise communication solutions

ICTNWK540 Design, build and test network servers

ICTNWK546 Manage network security

ICTNWK557 Configure and manage advanced virtual computing environments

ICTNWK559 Install an enterprise virtual computing environment

Group B Advanced Programming Specialisation

ICTPRG535 Build advanced user interfaces

ICTPRG547 Apply advanced programming skills in another language

ICTPRG549 Apply intermediate object-oriented language skills

ICTPRG554 Manage data persistence using noSQL data stores

ICTPRG556 Implement and use a model view controller framework

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Group C Back End Web Development Specialisation

ICTDBS507 Integrate databases with websites

ICTPRG553 Create and develop REST APIs

ICTPRG554 Manage data persistence using noSQL data stores

ICTWEB522 Develop website information architecture

ICTWEB525 Implement quality assurance process for websites

Group D Business Analysis Specialisation

ICTSAD507 Design and implement quality assurance processes for business solutions

ICTSAD508 Develop technical requirements for business solutions

ICTSAD509 Produce ICT feasibility reports

ICTSAS502 Establish and maintain client user liaison

ICTSAS526 Review and update disaster recovery and contingency plans

Group E Cloud Architect Specialisation

ICTCLD501 Develop cloud disaster recovery plans

ICTCLD502 Design and implement highly-available cloud infrastructure

ICTCLD503 Implement web-scale cloud infrastructure

ICTCLD504 Improve cloud-based infrastructure

Group F Cloud Engineer Specialisation

ICTCLD505 Implement cloud infrastructure with code

ICTCLD506 Implement virtual network in cloud environments

ICTCLD507 Build and deploy resources on cloud platforms

ICTCLD508 Manage infrastructure in cloud environments

Group G Cyber Security Specialisation

ICTCYS407 Gather, analyse and interpret threat data

ICTCYS610 Protect critical infrastructure for organisations

ICTCYS613 Utilise design methodologies for security architecture

ICTSAS524 Develop, implement and evaluate an incident response plan

ICTSAS526 Review and update disaster recovery and contingency plans

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Group H Database and Data Management Specialisation

ICTDBS503 Create a data warehouse

ICTDBS505 Monitor and improve knowledge management systems

ICTDBS506 Design databases

ICTDBS507 Integrate databases with websites

ICTSAD502 Model data processes

Group I Front End Web Development Specialisation

ICTICT530 Design user experience solutions

ICTWEB513 Build dynamic websites

ICTWEB514 Create dynamic web pages

ICTWEB518 Build a document using extensible markup language

ICTWEB519 Develop complex web page layouts

ICTWEB520 Develop complex cascading style sheets

Group J Game Art and Design Specialisation

ICTGAM539 Create and implement designs for 3-D games environments

ICTGAM542 Animate 3-D characters for digital games

ICTGAM543 Produce digital animation sequences

ICTGAM545 Manage technical art and rigging in 3-D animations

ICTGAM552 Create complex 3-D characters for games

Group K Game Programming Specialisation

ICTGAM423 Apply artificial intelligence in game development

ICTGAM533 Create complex 3-D interactive games

ICTGAM535 Develop complex 3-D software for games and interactive media

ICTGAM537 Prepare games for different platforms and delivery modes

ICTICT433 Build graphical user interfaces

Group L Systems Administration Specialisation

ICTNWK615 Design and configure desktop virtualisation

ICTSAS512 Review and manage delivery of maintenance services

ICTSAS518 Install and upgrade operating systems

ICTSAS524 Develop, implement and evaluate an incident response plan

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Group M Systems Analysis Specialisation

ICTNWK548 Model preferred system solutions

ICTSAD501 Model data objects

ICTSAD502 Model data processes

ICTSAS506 Update ICT system operational procedures

ICTSAS520 Develop detailed test plans

Group N General electives

Advanced IT Support

ICTICT503 Validate quality and completeness of system design specifications

ICTICT506 Implement process re-engineering strategies

ICTICT518 Research and review hardware technology options for organisations

ICTICT519 Develop detailed component specifications from project specifications

ICTICT520 Confirm transition strategy for a new system

ICTICT521 Select new technology supported business model

ICTICT524 Determine ICT strategies and solutions for organisations

ICTICT525 Identify and manage the implementation of industry specific technologies

ICTICT526 Verify client business requirements

ICTICT528 Deploy smart contracts

ICTSAS517 Use network tools

ICTSAS519 Perform systems tests

ICTSAS521 Perform integration tests

ICTSAS522 Manage the testing process

ICTSAS523 Perform stress and load tests on integrated platforms

ICTSAS525 Develop and conduct client acceptance test

ICTSAS528 Review and develop ICT maintenance strategy

ICTSAS529 Prioritise ICT change requests

Blockchain Solutions

ICTICT527 Develop and maintain blockchain solutions

Business Management

BSBPMG518 Manage project procurement

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ICTICT435 Create technical documentation

ICTICT443 Work collaboratively in the ICT industry

ICTICT523 Gather data to identify business requirements

ICTSAD503 Minimise risk of new technologies to business solutions

PSPPCM023 Manage strategic contracts

Data Engineering

ICTDAT501 Gather, analyse and verify data from different source inputs

ICTDAT502 Conduct significance tests

ICTDAT503 Use unsupervised learning for clustering

Design

CUADIG502 Design digital applications

CUADIG503 Design e-learning resources

CUADIG507 Design digital simulations

CUAPHI504 Employ specialised imaging technologies

Digital Media

CUAPOS201 Perform basic vision and sound editing

CUAPOS401 Edit screen content for fast turnaround

CUASOU407 Edit sound

CUASOU504 Produce sound recordings

ICTDMT501 Incorporate and edit digital video

Gaming Development

ICTGAM419 Build a database to support a computer game

ICTGAM532 Create design concepts for digital games and 3-D media

ICTGAM534 Manage interactive media productions

ICTGAM536 Design interactive 3-D applications for scientific and mathematical modelling

ICTGAM538 Manage testing of games and interactive media

ICTGAM540 Design and create models for 3-D and digital effects environments

ICTGAM541 Design and create advanced particles, fluids and bodies for 3-D digital effects

ICTGAM544 Animate physical attributes of models and elements

ICTGAM546 Create and combine 3-D digital games and components

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ICTGAM547 Create interactive 3-D environments for digital games

ICTGAM548 Complete digital editing for 3-D and digital effects environments

ICTGAM549 Collaborate in design of 3-D game levels and environments

ICTGAM550 Integrate multiple data sources into interactive 3-D environments

ICTGAM551 Apply digital texturing for the 3-D environment in digital games

ICTGAM553 Integrate databases with online games

ICTGAM554 Create games for mobile devices

ICTGAM555 Analyse business opportunities in the digital games environments

ICTGAM556 Develop and implement physics in 3-D digital games

ICTGAM557 Complete compositing to create elements for 3-D and digital effects environments

Internet of Things

ICTIOT501 Install IT devices and networks

ICTIOT502 Program IoT devices

ICTIOT503 Design and test IoT devices and networks

Networking

ICTNWK515 Develop configuration management protocols

ICTNWK517 Determine best-fit topology for a wide area network

ICTNWK518 Design an enterprise wireless local area network

ICTNWK531 Configure an internet gateway

ICTNWK537 Implement secure encryption technologies

ICTNWK538 Install and maintain valid authentication processes

ICTNWK539 Design and implement integrated server solutions

ICTNWK541 Configure, verify and troubleshoot WAN links and IP services

ICTNWK542 Install, operate and troubleshoot medium enterprise routers

ICTNWK543 Install, operate and troubleshoot medium enterprise switches

ICTNWK544 Design and implement a security perimeter for ICT networks

ICTNWK545 Develop, implement and evaluate systems and applications security

ICTNWK547 Manage system security on operational systems

ICTNWK549 Design ICT security frameworks

ICTNWK550 Design ICT system security controls

ICTNWK551 Build decks using wireless markup language

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ICTNWK552 Install and configure network access storage devices
ICTNWK553 Configure enterprise virtual computing environments
ICTNWK554 Manage enterprise virtual computing environments
ICTNWK556 Identify and resolve network problems
ICTNWK558 Monitor and troubleshoot virtual computing environments
ICTNWK623 Manage ICT security

Programming

ICTPRG509 Build using rapid application development
ICTPRG530 Manage projects using software management tools
ICTPRG531 Prepare for application development using current methods
ICTPRG533 Debug and monitor applications
ICTPRG534 Deploy applications to production environments
ICTPRG536 Design application architecture
ICTPRG537 Implement security for applications
ICTPRG538 Create mashups
ICTPRG540 Maintain custom software
ICTPRG541 Monitor and support data conversion to new ICT system
ICTPRG542 Review developed software
ICTPRG543 Develop integration blueprint for ICT systems
ICTPRG544 Install, test and evaluate pilot version of ICT systems
ICTPRG545 Monitor system pilots
ICTPRG548 Develop high-level object-oriented class specifications
ICTPRG550 Perform ICT data conversions
ICTPRG555 Implement object relational mapping framework for data persistence
ICTPRG603 Develop advanced mobile multi-touch applications

Project Management

BSBPMG513 Manage project quality
BSBPMG517 Manage project risk
BSBPMG520 Manage project governance
ICTICT529 Organise and lead agile projects
ICTPMG505 Manage ICT projects

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Systems and Software Design

ICTPRG546 Validate application designs against specifications

ICTPRG551 Apply testing techniques for software development

Web Design and Development

ICTWEB441 Produce basic client-side script

ICTWEB452 Create a markup language document

ICTWEB517 Create web-based programs

ICTWEB521 Customise complex ICT content management systems

ICTWEB523 Manage transactions using site server tools

ICTWEB524 Analyse information and assign meta tags

ICTWEB526 Implement and use web services

ICTWEB527 Research and apply emerging web technology trends

Specialisations

As stated above, where relevant, the choice of elective units set out in the packaging rules at qualification outset can serve to provide the qualification with one or more of the following specialisations. The rules to achieve a specialisation are detailed below.

The achievement of more than one specialisation may be indicated on the same testamur as follows:

- ICT50120 Diploma of Information Technology (Advanced Networking)
- ICT50120 Diploma of Information Technology (Advanced Programming)
- ICT50120 Diploma of Information Technology (Back End Web Development)
- ICT50120 Diploma of Information Technology (Business Analysis)
- ICT50120 Diploma of Information Technology (Cloud Architecture)
- ICT50120 Diploma of Information Technology (Cloud Engineering)
- ICT50120 Diploma of Information Technology (Cyber Security)
- ICT50120 Diploma of Information Technology (Database and Data Management)
- ICT50120 Diploma of Information Technology (Front End Web Development)
- ICT50120 Diploma of Information Technology (Game Art and Design)
- ICT50120 Diploma of Information Technology (Game Programming)
- ICT50120 Diploma of Information Technology (Systems Administration)
- ICT50120 Diploma of Information Technology (Systems Analysis).

Packaging rules to achieve a specialisation

Advanced Networking

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- Select all 6 elective units from Group A Advanced Networking Specialisation

Advanced Programming

- Select all 5 elective units from Group B Advanced Programming Specialisation

Back End Web Development

- Select all 5 elective units from Group C Back End Web Development Specialisation

Business Analysis

- Select all 5 elective units from Group D Business Analysis Specialisation

Cloud Architecture

- Select all 4 elective units from Group E Cloud Architect Specialisation

Cloud Engineering

- Select all 4 elective units from Group F Cloud Engineers Specialisation

Cyber Security

- Select all 5 elective units from Group G Cyber Security Specialisation

Database and Data Management

- Select all 5 elective units from Group H Database and Data Management Specialisation

Front End Web Development

- Select all 6 elective units from Group I Front End Web Development Specialisation

Game Art and Design

- Select all 5 elective units from Group J Game Art and Design Specialisation

Game Programming

- Select all 5 elective units from Group K Game Programming Specialisation

Systems Administration

- Select all 4 elective units from Group L Systems Administration Specialisation

Systems Analysis

- Select all 5 elective units from Group M Systems Analysis Specialisation

Qualification Mapping Information

No equivalent qualification. Supersedes and is not equivalent to:

- ICT50118 Diploma of Information Technology
- ICT50215 Diploma of Digital and Interactive Games
- ICT50318 Diploma of Information Technology Systems Administration
- ICT50418 Diploma of Information Technology Networking
- ICT50515 Diploma of Database Design and Development
- ICT50615 Diploma of Website Development
- ICT50718 Diploma of Software Development

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- ICT50818 Diploma of Systems Analysis and Design
- ICT50915 Diploma of Digital Media Technologies.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICT51015 Diploma of Telecommunications Engineering

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Qualification Description

This qualification reflects the role of a technical specialist, with high level skills and knowledge in telecommunications and information technology (IT) networks using internet protocol (IP) systems.

An individual in this role can install, test and commission voice and data communications networks in medium to large enterprises using next generation networks technologies. They canprovide specialist technical support in monitoring and administering the installation and upgrade of large telecommunications and IT networks including local area networks (LAN) and wide area networks (WAN), IP based protocol systems, voice over internet protocol (VoIP) and unified communications networks, secured networks, cellular mobile networks, microwave systems, wireless and wired line networks, databases, routers, switches and servers.

The following specialisations can be achieved through selection of specific units of competency:

- Management
- Network Engineering
- Optical Networks
- Radio Communications.

Licensing/Regulatory Information

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Entry Requirements

Entry to this qualification is limited to those individuals who:

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- Have completed a Certificate IV or Diploma from the ICT Information and Communications Technology Training Package.

or

- Have completed a Certificate III in Telecommunications with at least one year full time equivalent and relevant telecommunications practical experience.

or

- Have completed a Certificate III or a Certificate IV qualification in related technical fields of study with at least one year full time equivalent and relevant telecommunications practical experience.

or

Have completed a minimum of three years equivalent full-time experience in the telecommunications industry with particular technical experience in; installation of cabling; diagnosis and rectification of telecommunications system faults; and the delivery and operation of network infrastructure, for core and access networks in accordance with industry regulations and legislative requirements.

Packaging Rules

Total number of units = 12

5 core units plus

7 electives units

The electives consist of:

- up to 7 units selected from the electives listed below
- up to 2 may be selected from any currently endorsed Training Package or accredited course at AQF Level 5 or above.

Elective units must be relevant to the work environment and the qualification, maintain the integrity of the AQF alignment and contribute to a valid, industry-supported vocational outcome.

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Units selected from other Training Packages or accredited courses must not duplicate units selected from or available within the ICT Information and Communications Technology Training Package.

Refer to the *Specialisations* information below, and to the Companion Volume Implementation Guide, for advice about choosing electives to support specialisations in particular sectors of the information and communications industry.

Core Units

BSBSUS501 Develop workplace policy and procedures for sustainability

BSBWHS501 Ensure a safe workplace

ICTPMG503 Prepare a project brief

ICTPMG504 Prepare project specifications

ICTTEN516 Produce technical solutions from business specifications

Elective Units

Group A General administration

BSBPMG522 Undertake project work

ICTICT508 Evaluate vendor products and equipment

ICTEDU501 Develop and deliver training associated with new and modified products

ICTPRO501 Develop training, marketing and sales resources for telecommunications products

ICTSUS501 Implement server virtualisation for a sustainable ICT system

ICTTEN502 Design a telecommunications project

Group B General ICT

ICTNWK516 Determine best-fit topology for a local network

ICTCMP501 Undertake radio communications site audit

ICTICT516 Test telecommunications network using virtual instruments

ICTPMG502 Develop customer premises equipment installation project plans

ICTTEN503 Design an electronic system for a telecommunications network

ICTTEN504 Acceptance test new systems and equipment

ICTTEN505 Commission telecommunications network equipment

ICTTEN506 Integrate new systems and equipment into the telecommunications network

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ICTTEN507 Cut over new and replacement network equipment

ICTTEN508 Locate, diagnose and rectify complex faults

ICTTEN509 Provide expert advice and support on complex faults

ICTTEN510 Undertake planned outage management

ICTTEN511 Administer a data communications network

ICTTEN512 Design and implement an enterprise voice over internet protocol and a unified communications network

ICTTEN515 Dimension and design a radio frequency identification system

ICTTEN517 Plan a wireless mesh network

Group C Radio communications

ICTRFN501 Test cellular handset enhancements and international roaming agreements

ICTRFN502 Test and measure cellular phone and network equipment performance

ICTRFN503 Evaluate and analyse radio frequency signal coverage plots

ICTRFN601 Monitor the capacity of and recommend changes to the cellular mobile network

ICTRFN602 Produce and evaluate architecture designs for WiMAX networks

Group D Network engineering and management

ICTNPL503 Apply service measures and demand forecasting to products and services planning

Group E Optical and network engineering

ICTOPN501 Plan and configure dense wavelength division multiplexing systems

ICTOPN502 Perform acceptance and commissioning tests on optical network

ICTOPN503 Plan for an optical system upgrade and cut over

ICTOPN504 Test and commission a dense wavelength division multiplexing transmission system

ICTOPN505 Test the performance of specialised optical devices

ICTOPN506 Analyse and integrate specialised optical devices in the network

Group F Management

BSBDES501 Implement design solutions

BSBDES502 Establish, negotiate and refine a design brief

BSBDES601 Manage design realisation

BSBDES602 Research global design trends

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BSBFIM501 Manage budgets and financial plans

BSBPMG521 Manage project integration

BSBWHS504 Manage WHS risks

ICTNPL401 Apply business acumen to network planning

ICTNPL409 Apply knowledge of regulation and legislation for the telecommunications industry

ICTPMG610 Develop a project management plan

Group G Network engineering

ICTNPL501 Develop planning strategies for core network design

ICTNPL502 Develop planning strategies for access network design

ICTNPL504 Develop planning strategies for building environment design

ICTTEN501 Provide consultancy and technical support in the customer premises equipment sector

ICTTEN513 Install, configure and test a local area network switch

ICTTEN514 Install, configure and test a server

Specialisations

The use of specialist streams is appropriate for this qualification in accordance with the AQF, Standards for Training Packages and the packaging rules. Where a specialist stream is achieved, testamurs must show the appropriate specialisation in brackets. Refer to the Companion Volume Implementation Guide for further advice about specialisations.

Minimum elective units required for the specific specialisations are described below.

Management

Select the following 5 units:

- ICTNPL401 Apply business acumen to network planning
- ICTNPL409 Apply knowledge of regulation and legislation for the telecommunications industry
- ICTNPL503 Apply service measures and demand forecasting to products and services planning
- ICTPMG610 Develop a project management plan
- BSBFIM501 Manage budgets and financial plans.

The remaining 2 electives must be selected from Groups A, D and F only.

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Network Engineering

Select the following 4 units:

- BSBPMG522 Undertake project work
- ICTTEN502 Design a telecommunications project
- ICTTEN513 Install, configure and test a local area network switch
- ICTTEN514 Install, configure and test a server.

The remaining 3 electives must be selected from Groups A, B, C, D, E, and G only.

Optical Network

Select the following 5 units:

- ICTOPN501 Plan and configure dense wavelength division multiplexing systems
- ICTOPN502 Perform acceptance and commissioning tests on optical network
- ICTOPN503 Plan for an optical system upgrade and cut over
- ICTOPN504 Test and commission a dense wavelength division multiplexing transmission system
- ICTOPN506 Analyse and integrate specialised optical devices in the network.

The remaining 2 electives must be selected from Groups A, B and E only.

Radio Communications

Select the following 5 units:

- ICTRFN502 Test and measure cellular phone and network equipment performance
- ICTRFN503 Evaluate and analyse radio frequency signal coverage plots
- ICTRFN602 Produce and evaluate architecture designs for WiMAX networks
- ICTTEN502 Design a telecommunications project
- ICTTEN517 Plan a wireless mesh network.

The remaining 2 electives must be selected from Groups A, B and C only.

Qualification Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICT51015 Diploma of Telecommunications Engineering	ICT50110 Diploma of Optical Networks	Updated to meet Standards for Training Packages.	No equivalent qualification

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Code and title current version	Code and title previous version	Comments	Equivalence status
	ICT50210 Diploma of Telecommunications Network Engineering ICT50310 Diploma of Telecommunications Management ICT50410 Diploma of Radio Frequency Networks	Changes to core units and packaging rules. Increased total number of units required.	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICT51115 Diploma of Telecommunications Planning and Design

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Qualification Description

This qualification reflects the role of a technical specialist with a range of telecommunications skills and extensive knowledge of the core and access network capabilities of the service provider. An individual in this role can:

- plan the development of the customer access network infrastructure
- plan the development of the core network for the service provider and asset owner
- plan network capacity for new technology in products and services
- analyse demand data and evaluate network growth and impact on the network.

This qualification prepares individuals to work in the telecommunications industry in planning and designing additions and implementations to accommodate network growth and new technologies. This is required for the national broadband infrastructure network planning.

Licensing/Regulatory Information

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Entry Requirements

Entry to this qualification is limited to those individuals who:

- Have completed a Certificate IV in Telecommunications Network Design or its equivalent.

or

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- Have completed a minimum of three years equivalent full-time relevant workplace experience in the telecommunications industry with experience in provisioning, evaluation, planning, design, costing and deployment of core networks and access networks.

Packaging Rules

Total number of units = 12

6 Core units plus

6 Electives units

The elective units consist of:

- 6 units selected from any of the elective groups listed below.

A maximum of two elective units may be substituted with two units of competency from any currently endorsed Training Package or accredited course at AQF Level 5 or 6.

Elective units must be relevant to the work environment and the qualification, maintain the integrity of the Australian Qualifications Framework (AQF) alignment and contribute to a valid, industry-supported vocational outcome.

Units selected from other Training Packages or accredited courses must not duplicate units selected from or available within the ICT Information and Communications Technology Training Package.

Core

BSBPMG521 Manage project integration

BSBSUS501 Develop workplace policy and procedures for sustainability

ICTNPL501 Develop planning strategies for core network design

ICTNPL502 Develop planning strategies for access network design

ICTNPL503 Apply service measures and demand forecasting to products and services planning

ICTNPL504 Develop planning strategies for building environment design

Electives

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Financial management

BSBFIM501 Manage budgets and financial plans

FNSORG506 Prepare financial forecasts and projections

Education

ICTEDU501 Develop and deliver training associated with new and modified products

Design

BSBDES501 Implement design solutions

BSBDES502 Establish, negotiate and refine a design brief

BSBDES601 Manage design realisation

BSBDES602 Research global design trends

Network planning

ICTNPL601 Plan the development and growth of the telecommunications network

Project management

ICTPMG503 Prepare a project brief

ICTPMG504 Prepare project specifications

ICTPMG610 Develop a project management plan

Product skills and advice

ICTPRO501 Develop training, marketing and sales resources for telecommunications products

Sustainability

ICTSUS501 Implement server virtualisation for a sustainable ICT system

Telecommunications engineering networks

ICTTEN501 Provide consultancy and technical support in the customer premises equipment sector

ICTTEN517 Plan a wireless mesh network

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Qualification Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICT51115 Diploma of Telecommunications Planning and Design	ICT50513 Diploma of Telecommunications Planning and Design	Updated to meet Standards for Training Packages	Equivalent qualification

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICT60120 Advanced Diploma of Information Technology

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.
Release 2	Adding the following elective unit of comptency: • ICTNWK617 Configure and manage a storage area networks.

Qualification Description

This qualification reflects the role of individuals in a variety of information and communications technology (ICT) roles who have significant experience in specialist technical skills, or managerial business and people management skills.

Individuals in these roles carry out complex tasks in a specialist field, working independently, leading a team or a strategic direction of a business. They apply their skills across a wide range of industries and business functions, or as a business owner (sole trader/contractor).

The skills required for these roles may include, but are not restricted to:

- advanced data management information: creating, designing and monitoring complex systems that store data, and optimising organisational knowledge management
- cyber security: protecting sensitive data and information through security architecture, and developing disaster recovery and contingency plans
- full stack web development: building advanced user interfaces, developing representational state transfer application program interfaces (REST APIs) and designing user experience solutions
- further programming: applying advanced ICT languages to maintain security and manage data
- IT strategy and organisational development: managing and communicating strategic ICT business solutions
- systems development and analysis: modelling and testing data objects, data processes and preferred ICT system solutions.

Licensing, legislative, regulatory or certification considerations

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

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Entry Requirements

Nil

Packaging Rules

Total number of units = 16

6 core units plus

10 elective units, of which:

- at least 7 units must be selected from the elective units listed below
- up to 3 units may be selected from the remaining listed elective units or from this or any currently endorsed Training Package or accredited course where the units are packaged in an Australian Qualification Framework (AQF) Level 5 or 6 qualification.

Elective units must be relevant to the work environment and the qualification, maintain the integrity of the AQF alignment and contribute to a valid, industry-supported vocational outcome.

Units selected from other Training Packages or accredited courses must not duplicate units selected from or available within the ICT Information and Communications Technology Training Package.

Where relevant, the choice of elective units set out in the packaging rules above can serve to provide the qualification with one or more of the following specialisations. The rules to achieve a specialisation are detailed at the qualification end.

- Advanced data management information
- Cyber security
- Full stack web development
- Further programming
- IT strategy and organisational development
- Systems development and analysis

Core units

BSBCRT601 Research and apply concepts and theories of creativity

BSBWOR502 Lead and manage team effectiveness

BSBXCS402 Promote workplace cyber security awareness and best practices

ICTICT608 Interact with clients on a business level

ICTICT618 Manage IP, ethics and privacy in ICT environments

ICTSAD609 Plan and monitor business analysis activities in an ICT environment

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Elective units

Group A Advanced Data Management Information Specialisation

ICTDBS604 Build data warehouses

ICTDBS605 Develop knowledge management strategies

ICTDBS606 Determine database functionality and scalability

ICTICT523 Gather data to identify business requirements

Group B Cyber Security Specialisation

ICTCYS604 Implement best practices for identity management

ICTCYS606 Evaluate an organisation's compliance with relevant cyber security standards and law

ICTCYS608 Perform cyber security risk assessments

ICTCYS612 Design and implement virtualised cyber security infrastructure for organisations

Group C Full Stack Web Development Specialisation

ICTICT530 Design user experience solutions

ICTPRG535 Build advanced user interfaces

ICTPRG553 Create and develop REST APIs

ICTSAD612 Implement and maintain uses of containerisation

Group D Further Programming Specialisation

ICTPRG537 Implement security for applications

ICTPRG547 Apply advanced programming skills in another language

ICTPRG554 Manage data persistence using noSQL data stores

Group E IT Strategy and Organisational Development Specialisation

ICTICT611 Develop ICT strategic business plans

ICTSAD604 Manage and communicate ICT solutions

ICTSAD608 Perform ICT-focused enterprise analysis

ICTSAD611 Manage assessment and validation of ICT solutions

Group F Systems Development and Analysis Specialisation

ICTPRG605 Manage development of technical solutions from business specifications

ICTSAD610 Analyse stakeholder requirements

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ICTSAD612 Implement and maintain uses of containerisation

ICTSAD613 Install and configure container orchestration services

Group G General electives

Advanced Cloud Computing

ICTCLD601 Develop cloud computing strategies for businesses

ICTCLD602 Manage information security compliance of cloud service deployment

Advanced Cyber Security

ICTCYS603 Undertake penetration testing for organisations

ICTCYS607 Acquire digital forensic data

ICTCYS609 Evaluate threats and vulnerabilities of IoT devices

Application and Software Development

ICTPRG549 Apply intermediate object-oriented language skills

ICTPRG603 Develop advanced mobile multi-touch applications

ICTPRG614 Create cloud computing services

Cyber Security Network Operations

ICTCYS601 Create cyber security standards for organisations

ICTCYS602 Implement cyber security operations

ICTCYS611 Configure security devices for organisations

Data Management

ICTDBS505 Monitor and improve knowledge management systems

Project Management

BSBPMG513 Manage project quality

BSBPMG517 Manage project risk

BSBPMG520 Manage project governance

ICTICT505 Determine acceptable developers for projects

ICTICT529 Organise and lead agile projects

ICTPMG612 Manage ICT project initiation

ICTPMG613 Manage ICT project planning

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ICTPMG614 Manage ICT project delivery
ICTPMG615 Manage ICT project closure
ICTPMG616 Manage ICT project systems implementation
ICTPMG617 Plan and direct complex ICT projects
ICTSAS522 Manage the testing process

IT Work Ready Skills

ICTICT522 Evaluate vendor products and equipment
ICTICT612 Develop contracts and manage contract performance
ICTICT613 Manage the use of development methodologies
ICTICT616 Develop communities of practice
ICTICT617 Lead the evaluation and implementation of current industry specific technologies
ICTSAD602 Conduct knowledge audits
ICTSAD605 Elicit ICT requirements
ICTSUS601 Integrate sustainability in ICT planning and design projects
PSPPCM023 Manage strategic contracts

Network Security

CPPSEC3124 Prepare and present evidence in court
CPPSEC5003 Assess security risk management options
CPPSEC5004 Develop security risk management plans
CPPSEC5005 Implement security risk management plans
CPPSEC5006 Develop strategies to implement advanced technology security systems
ICTNWK537 Implement secure encryption technologies
ICTNWK538 Install and maintain valid authentication processes
ICTNWK539 Design and implement integrated server solutions
ICTNWK540 Design, build and test network servers
ICTNWK541 Configure, verify and troubleshoot WAN links and IP services
ICTNWK544 Design and implement a security perimeter for ICT networks
ICTNWK549 Design ICT security frameworks
ICTNWK552 Install and configure network access storage devices
ICTNWK553 Configure enterprise virtual computing environments
ICTNWK554 Manage enterprise virtual computing environments
ICTNWK556 Identify and resolve network problems

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ICTNWK557 Configure and manage advanced virtual computing environments

ICTNWK558 Monitor and troubleshoot virtual computing environments

ICTNWK559 Install an enterprise virtual computing environment

ICTNWK603 Plan, configure and test advanced internetwork routing solutions

ICTNWK604 Plan and configure advanced internetwork switching solutions

ICTNWK605 Design and configure secure integrated wireless systems

ICTNWK606 Implement voice applications over secure wireless networks

ICTNWK610 Design and build integrated VoIP networks

ICTNWK611 Configure call processing network elements for secure VoIP networks

ICTNWK612 Plan and manage troubleshooting advanced integrated IP networks

ICTNWK613 Develop plans to manage structured troubleshooting process of enterprise networks

ICTNWK615 Design and configure desktop virtualisation

ICTNWK617 Configure and manage a storage area network

ICTNWK618 Design and implement a security system

ICTNWK619 Plan, configure and test advanced server-based security

ICTNWK620 Design and implement wireless network security

ICTNWK621 Configure network devices for a secure network infrastructure

ICTNWK622 Configure and manage intrusion prevention system on network sensors

ICTSAS517 Use network tools

Strategy and Business Management

BSBINN601 Lead and manage organisational change

BSBMGT608 Manage innovation and continuous improvement

BSBPMG518 Manage project procurement

ICTICT614 Identify and implement business innovation

ICTICT615 Implement knowledge management strategies

ICTSAD507 Design and implement quality assurance processes for business solutions

ICTSAD508 Develop technical requirements for business solutions

ICTSAS602 Implement change management processes

Web design and Development

ICTWEB513 Build dynamic websites

ICTWEB514 Create dynamic web pages

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ICTWEB517 Create web-based programs

ICTWEB519 Develop complex web page layouts

Specialisations

As stated above, where relevant, the choice of elective units set out in the packaging rules at qualification outset can serve to provide the qualification with one or more of the following specialisations. The rules to achieve a specialisation are detailed below.

The achievement of more than one specialisation may be indicated on the same testamur as follows:

- ICT60120 Advanced Diploma of Information Technology (Advanced Data Management Information)
- ICT60120 Advanced Diploma of Information Technology (Cyber Security)
- ICT60120 Advanced Diploma of Information Technology (Full Stack Web Development)
- ICT60120 Advanced Diploma of Information Technology (Further Programming)
- ICT60120 Advanced Diploma of Information Technology (IT Strategy and Organisational Development)
- ICT60120 Advanced Diploma of Information Technology (Systems Development and Analysis).

Packaging rules to achieve a specialisation

Advanced Data Management Information

- Select all 4 elective units from Group A Advanced Data Management Information Specialisation

Cyber Security

- Select all 4 elective units from Group B Cyber Security Specialisation

Full Stack Web Development

- Select all 4 elective units from Group C Full Stack Web Development Specialisation

Further Programming

- Select all 3 elective units from Group D Further Programming Specialisation

IT Strategy and Organisational Development

- Select all 4 elective units from Group E IT Strategy and Organisational Development Specialisation

Systems Development and Analysis

- Select all 4 elective units from Group F Systems Development and Analysis Specialisation

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Qualification Mapping Information

No equivalent qualification. Supersedes and is not equivalent to:

- ICT60115 Advanced Diploma of Information Technology
- ICT60215 Advanced Diploma of Network Security
- ICT60315 Advanced Diploma of Information Technology Business Analysis
- ICT60415 Advanced Diploma of Information Technology Project Management
- ICT60515 Advanced Diploma of Computer Systems Technology
- ICT80115 Graduate Certificate in Information Technology and Strategic Management.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICT60615 Advanced Diploma of Telecommunications Network Engineering

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Qualification Description

This qualification reflects the role a technical specialist with high level skills and knowledge in telecommunications and information technology networks using internet protocol (IP) systems who can:

- forecast network growth for enterprise network planning
- design and manage IP based network telecommunications equipment
- implement convergence technologies in enterprise telecommunications networks
- design and manage optical and wireless network telecommunications architectures for high speed broadband capability.

Licensing /Regulatory Information

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Entry Requirements

Nil

Packaging Rules

Total number of units = 10

4 Core units plus

6 Elective units

The elective units consist of:

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- all 6 units may be selected from the electives units listed below, with a minimum of 2 electives at AQF Level 6
- up to 2 elective units may be substituted with units of competency from any currently endorsed Training Package or accredited course at AQF Level 6 or above.

Elective units must be relevant to the work environment and the qualification, maintain the integrity of the AQF alignment and contribute to a valid, industry-supported vocational outcome.

Units selected from other Training Packages or accredited courses must not duplicate units selected from or are available within the ICT Information and Telecommunications Technology Training Package.

Core Units

ICTPMG610 Develop a project management plan

ICTPMG611 Prepare a detailed design brief

ICTSUS601 Integrate sustainability in ICT planning and design projects

ICTTEN611 Produce an ICT network architecture design

Elective Units

ICT use (IP networks)

ICTNWK502 Implement secure encryption technologies

ICTNWK503 Install and maintain valid authentication processes

ICTNWK509 Design and implement a security perimeter for ICT networks

ICTNWK517 Determine best-fit topology for a wide area network

ICTNWK518 Design an enterprise wireless local area network

ICTNWK520 Design ICT system security controls

ICTSAS409 Manage risks involving ICT systems and technology

ICTSAS505 Review and update disaster recovery and contingency plans

Network planning

ICTNPL601 Plan the development and growth of the telecommunications network

ICTNPL602 Forecast service demand

ICTNPL603 Undertake network performance analysis

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Planning

BSBDES601 Manage design realisation

BSBDES602 Research global design trends

Work health and safety

BSBWHS501 Ensure a safe workplace

BSBWHS504 Manage WHS risks

Optical networks

ICTOPN601 Manage optical ethernet transmission

ICTOPN602 Manage dense wavelength division multiplexing transmission system

ICTOPN603 Design a dense wavelength division multiplexing system

ICTOPN604 Analyse optical transmission systems

Radio frequency networks

ICTRFN601 Monitor the capacity of and recommend changes to the cellular mobile network

ICTRFN602 Produce and evaluate architecture designs for WiMAX networks

Sustainability

ICTSUS602 Establish a business case for sustainability and competitive advantage in ICT projects

Telecommunications engineering networks

ICTTEN601 Undertake qualification testing of new or enhanced equipment and systems

ICTTEN602 Undertake system administration

ICTTEN603 Undertake network traffic management

ICTTEN604 Coordinate fault rectification and restoration of service following network outages

ICTTEN605 Implement planned network changes with minimal impact to the customer

ICTTEN606 Manage a common channel signalling network

ICTTEN607 Analyse and organise repair of highly complex telecommunications network faults

ICTTEN608 Verify new software and hardware releases

ICTTEN609 Produce and evaluate architecture designs for convergent cellular mobile networks

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Emerging technologies

ICTTEN612 Design and manage internet protocol TV in a service provider network

IP networks

ICTTEN610 Install and configure an IP-MPLS network with virtual private network tunnelling

Qualification Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICT60615 Advanced Diploma of Telecommunications Network Engineering	ICT60210 Advanced Diploma of Telecommunications Network Engineering	Updated to meet Standards for Training Packages	Equivalent qualification
	ICT60110 Advanced Diploma of Optical Networks	Updated to meet Standards for Training Packages. Changed packaging rules. Changed core units.	No equivalent qualification

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICT80315 Graduate Certificate in Telecommunications

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package version 2.0. Release 2 created to complete minor edits and to update unit codes.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0

Qualification Description

This qualification provides the skills and knowledge for individuals to lead strategic and operational information and telecommunications networking solutions. Services and solutions cover a wide range of simple and convergent information and communications technologies requiring the analysis of current and future business and customer requirements; service or solution design; testing, delivery and optimisation.

The individual devises innovative solutions and delivery, using extensive consultation and collaboration with key stakeholders, in a range of situations including complex, geographically dispersed organisations.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Entry to this qualification is limited to those who:

Have completed a Bachelor degree in related fields of study.

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or

Have completed a Diploma or Advanced Diploma qualification in related fields of study and 2 years equivalent full-time relevant workplace experience at a significant level of leadership and management responsibility and/or complexity in an enterprise.

or

Three years equivalent full-time relevant workplace experience at a significant level of leadership and management responsibility and/or complexity in an enterprise.

Packaging Rules

Total number of units = 4

1 core unit *plus*

3 elective units

The elective units must be relevant to the industry-supported vocational outcomes, local industry requirements and is to be chosen as follows:

The elective units consist of:

- up to 3 from the elective units listed below
- up to 1 from elsewhere in ICT Information and Communications Technology Training Package, or any other Training Package or accredited course at Graduate Certificate level or above.

Units selected from other Training Packages or accredited courses must not duplicate units selected from or available within the ICT Information and Communications Technology Training Package.

Core Units

ICTPMG802 Manage a telecommunications project

Elective Units

BSBINN801 Lead innovative thinking and practice

BSBLDR803 Develop and cultivate collaborative partnerships and relationships

ICTICT811 Manage an information architecture project

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ICTICT813 Manage ICT services

ICTICT815 Manage automated ICT system applications using enterprise wide operating system

ICTPMG801 Manage a telecommunications workplace

ICTPMG804 Evaluate and use telecommunications management networks

ICTRFN801 Produce a radio link budget

ICTRFN802 Analyse a cellular mobile network system

ICTRFN803 Analyse a satellite communications system

ICTSUS804 Use ICT to improve sustainability outcomes

ICTSUS806 Lead applied research in ICT sustainability

ICTSUS807 Conduct and manage a life cycle assessment for sustainability

ICTTEN802 Manage alignment of systems with product and technology strategy

ICTTEN803 Translate domain and solution architectures into platform requirements and designs

ICTTEN804 Manage end to end architectural solutions across multiple domains

ICTTEN805 Manage solution architecture and impacts in line with organisational processes

ICTTEN806 Manage application layer solutions

ICTTEN807 Lead voice, data and internet protocol network solutions

ICTTEN808 Manage network testing strategies

ICTTEN809 Analyse business specifications to produce technical solutions

Qualification Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICT80315 Graduate Certificate in Telecommunications (Release 2)	ICT80315 Graduate Certificate in Telecommunications (Release 1)	Minor edits. Updated unit codes.	Equivalent qualification

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICT80415 Graduate Diploma of Telecommunications Network Engineering

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package version 2.0. Release 2 created to update unit codes.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0

Qualification Description

This qualification provides the skills and knowledge for individuals in strategic and operational leadership roles in the technology domain. The individual provides domain thought leadership; assesses best possible and commercially viable telecommunications networks and systems solutions and services; plans changes to networks and systems in line with business strategy and enterprise product and technology roadmaps; analyses potential and real network problems; and develops innovative, commercially advantageous solutions.

The individual is a recognised authority and trusted business advisor for delivering tomorrow's solutions as well as optimisation of current network system performance and customer satisfaction. Research, analysis, design, development and deployment of technical and commercially viable solutions for: cloud computing, digital signal processing, cellular and satellite systems and telecommunications networks are requirements of the individual.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Entry to this qualification is limited to those who:

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Have completed a Bachelor degree in related fields of study and 2 years equivalent full-time relevant workplace experience at a significant level of project or program leadership and management responsibility and/or complexity in an enterprise.

or

Have completed a Diploma or Advanced Diploma qualification in related fields of study and 3 years equivalent full-time relevant workplace experience at a significant level of project or program leadership and management responsibility and/or complexity in an enterprise.

or

Five years equivalent full-time relevant workplace experience at a significant level of leadership and management responsibility and/or complexity in an enterprise.

Packaging Rules

Total number of units = 8

3 core units *plus*

5 elective units

The elective units must be relevant to the industry-supported vocational outcomes, local industry requirements and is to be chosen as follows:

The elective units consist of:

- up to 5 from the elective units listed below
- up to 1 from elsewhere in ICT Information and Communications Technology Training Package or any other Training Package or accredited course at Graduate Certificate level or above.

Units selected from other Training Packages or accredited courses must not duplicate units selected from or available within the ICT Information and Communications Technology Training Package.

Core Units

ICTPMG802 Manage a telecommunications project

ICTPMG804 Evaluate and use telecommunications management networks

ICTSUS806 Lead applied research in ICT sustainability

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Elective Units

BSBINN801 Lead innovative thinking and practice

ICTICT809 Facilitate business analysis

ICTICT801 Lead research into identifying new marketplace opportunities

ICTICT803 Endorse business plan components for a new initiative

ICTICT808 Direct the development of a knowledge management strategy for a business

ICTICT812 Develop a business intelligence framework

ICTICT814 Develop cloud computing strategies for a business

ICTICT815 Manage automated ICT system applications using enterprise wide operating system

ICTRFN801 Produce a radio link budget

ICTRFN802 Analyse a cellular mobile network system

ICTRFN803 Analyse a satellite communications system

ICTSUS807 Conduct and manage a life cycle assessment for sustainability

ICTTEN801 Plan a transmission network

ICTTEN805 Manage solution architecture and impacts in line with organisational processes

ICTTEN807 Manage voice, data and internet protocol network solutions

ICTTEN808 Manage network testing strategies

ICTTEN809 Analyse business specifications to produce technical solutions

ICTTEN810 Investigate the application of cloud networks in telecommunications switching

ICTTEN811 Evaluate and apply network security

ICTTEN812 Evaluate and apply digital signal processing to communications system

ICTTEN813 Produce engineering solutions using numerical computations and simulation

Qualification Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICT80415 Graduate Diploma in Telecommunications Network Engineering (Release 2)	ICT80415 Graduate Diploma in Telecommunications Network Engineering (Release 1)	Unit codes updated.	Equivalent qualification

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICT80515 Graduate Diploma of Telecommunications and Strategic Management

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package version 2.0. Release 2 created to update unit codes.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Qualification Description

This qualification provides the skills and knowledge for individuals to undertake strategic commercial and technical roles in the telecommunications industry. Individuals in this capacity collaborate with business leaders to set the telecommunications agenda, creating and deploying innovative and collaborative technologies that connect people and communities, enable superior levels of personal and collective productivity, and viably grow the telecommunications industry and enterprise profitability.

The individual is an authority and trusted business advisor in strategy development, identifying, designing, developing and deploying tomorrow's solutions. The individual leads and applies research; and analyses, designs, develops and deploys technical and commercially viable integrated solutions for businesses and organisations. The individual is regularly called upon to solve highly complex business and technical problems in geographically dispersed, dynamic and challenging environments.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Entry to this qualification is limited to those who:

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Have completed a Bachelor degree in related fields of study and 2 years equivalent full-time relevant workplace experience at a significant level of project or program leadership and management responsibility and/or complexity in an enterprise.

or

Have completed a Diploma or Advanced Diploma qualification in related fields of study and 3 years equivalent full-time relevant workplace experience at a significant level of project or program leadership and management responsibility and/or complexity in an enterprise.

or

Five years equivalent full-time relevant workplace experience at a significant level of leadership and management responsibility and/or complexity in an enterprise.

Packaging Rules

Total number of units = 8

2 core units *plus*

6 elective units

The elective units must be relevant to the industry-supported vocational outcomes, local industry requirements and is to be chosen as follows:

The elective units consist of:

- up to 6 from the elective units listed below
- up to 1 from elsewhere in ICT Information and Communications Technology Training Package or any other Training Package or accredited course at Graduate Certificate level or above.

Units selected from other Training Packages or accredited courses must not duplicate units selected from or available within the ICT Information and Communications Technology Training Package.

Core Units

BSBINN801 Lead innovative thinking and practice

ICTICT809 Facilitate business analysis

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Elective Units

ICTICT801 Lead research into identifying new marketplace opportunities

ICTICT803 Endorse business plan components for a new initiative

ICTICT808 Direct the development of a knowledge management strategy for a business

ICTICT812 Develop a business intelligence framework

ICTICT814 Develop cloud computing strategies for a business

ICTICT815 Manage automated ICT system applications using enterprise wide operating system

ICTPMG802 Manage a telecommunications project

ICTPMG804 Evaluate and use telecommunications management networks

ICTRFN801 Produce a radio link budget

ICTRFN802 Analyse a cellular mobile network system

ICTRFN803 Analyse a satellite communications system

ICTSUS806 Lead applied research in ICT sustainability

ICTSUS807 Conduct and manage a life cycle assessment for sustainability

ICTTEN801 Plan a transmission network

ICTTEN805 Manage solution architecture and impacts in line with organisational processes

ICTTEN807 Manage voice, data and internet protocol network solutions

ICTTEN808 Manage network testing strategies

ICTTEN809 Analyse business specifications to produce technical solutions

ICTTEN810 Investigate the application of cloud networks in telecommunications switching

ICTTEN811 Evaluate and apply network security

ICTTEN812 Evaluate and apply digital signal processing to communications system

ICTTEN813 Produce engineering solutions using numerical computations and simulation

Qualification Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	Equivalence status
ICT80515 Graduate Diploma of Telecommunications and Strategic Management	ICT80515 Graduate Diploma of Telecommunications and Strategic Management	Updated unit codes.	Equivalent qualification

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Code and title current version	**Code and title previous version**	**Comments**	Equivalence status
(Release 2)	(Release 1)		

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICT80615 Graduate Certificate in Telecommunications Network Engineering

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Qualification Description

This qualification reflects the role of a technical manager utilising a high level of technical management skills and knowledge in telecommunications networks and systems who can:

- plan changes and analyse network problems over a wide range of telecommunications technologies at managerial/supervisory levels
- diagnose problems and provide network management support
- plan a project from a design specification, research telecommunications technologies to meet the required specifications and report on the implementation of the project plan
- research and analyse the key concepts in design, construct and modify network management databases
- evaluate management systems and procedures used by the telecommunications industry.

Licensing/Regulatory Information

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Entry Requirements

Entry to this qualification is limited to those individuals who:

- Have completed a Bachelor degree in related fields of study.

or

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- Have completed a Diploma or Advanced Diploma qualification in related fields of study and two years equivalent full-time relevant workplace experience at a significant level of leadership and management responsibility and/or complexity in an enterprise.

or

Have three years equivalent full-time relevant workplace experience at a significant level of leadership and management responsibility and/or complexity in an enterprise.

Packaging Rules

Total number of units = 6

3 Core units plus

3 Elective units

The elective units consist of:

- all 3 elective units may be selected from the elective list below
- up to 2 elective units may be selected from any currently endorsed Training Package or accredited course at AQF Level 8 or above.

Elective units must be relevant to the work environment and the qualification, maintain the integrity of the Australian Qualification Framework (AQF) alignment and contribute to a valid, industry-supported vocational outcome.

Units selected from other Training Packages or accredited courses must not duplicate units selected from or available within the ICT Information and Telecommunications Technology Training Package.

Core Units

ICTPMG801 Manage a telecommunications workplace

ICTPMG803 Undertake a telecommunications project

ICTSUS804 Use ICT to improve sustainability outcomes

Elective Units

IT use (IP networks)

ICTICT815 Manage automated ICT system applications using Unix

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Project management

ICTPMG802 Manage a telecommunications project

Sustainability

ICTSUS805 Manage improvements in ICT sustainability

Radio frequency networks

ICTRFN801 Produce a radio link budget

Telecommunications engineering networks

ICTTEN801 Plan a transmission network

ICTTEN802 Manage alignment of systems with product and technology strategy

ICTTEN803 Translate domain and solution architectures into platform requirements and designs

ICTTEN804 Manage end to end architectural solutions across multiple domains

ICTTEN805 Manage solution architecture and impacts in line with organisational processes

ICTTEN806 Manage application layer solutions

ICTTEN807 Manage voice, data and internet protocol network solutions

ICTTEN808 Manage network testing strategies

ICTTEN809 Analyse business specifications to produce technical solutions

ICTTEN814 Manage development and application of testing artefacts

ICTTEN815 Manage project requirements and process implementations

ICTTEN816 Scope project requirements and process solutions

Qualification Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICT80615 Graduate Certificate in Telecommunications Network Engineering	ICT70110 Vocational Graduate Certificate in Telecommunications Network Engineering	Updated to meet Standards for Training Packages	Equivalent qualification

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTBWN306 Use radio frequency measuring instruments

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to set up and use radio frequency (RF) communications instruments to perform installations, upgrades and fault-finding on RF equipment and networks.

It applies to telecommunications lines workers who **only** use RF measuring instruments.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Broadband and Wireless Networks

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Prepare to use RF measuring instruments	1.1 Obtain approval for site access with customer or site owner prior to site entry 1.2 Identify purpose of test and type of RF measurement required 1.3 Select industry standard/approved tools and instruments according to required measurement 1.4 Check test instruments to ensure calibration is within acceptable time frames 1.5 Identify safety hazards, assess risks and implement risk control measures in consultation with appropriate personnel
2 Conduct RF	2.1 Set-up test equipment according to manufacturer instructions, industry

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Elements	Performance Criteria
measurements	standards and safe industry practices 2.2 Use appropriate testing techniques to assess overall system performance 2.3 Record and interpret test results, and compare with standard test specifications
3 Complete RF measurement process	3.1 Make recommendations, based on test result interpretations, to achieve optimum performance 3.2 Notify customer of work completion 3.3 Clean work area and make safe according to enterprise procedures

Foundation Skills

Skill	Description
Reading	• Reads and interprets plans, specifications instructions and other documentation from a variety of sources and consolidates information to determine requirements • Interprets and consolidates test results and data from a range of sources, against defined requirements
Writing	• Accurately records and completes enterprise documents and correspondence using clear language and correct spelling, grammar and terminology
Oral Communication	• Participates in verbal exchanges with key personnel using appropriate, clear and detailed language to exchange information, ideas or solutions • Uses listening and questioning skills to confirm understanding of requirements
Numeracy	• Performs mathematical calculations to check, interpret and confirm results of system tests
Navigate the world of work	• Complies with explicit policies and procedures • Explores and implements where identified the implicit expectations of policies and procedures
Interact with others	• Uses a range of accepted practices for communicating in a work environment • Complies with work instructions and contributes effectively to work group discussions
Get the work done	• Plans and implements routine tasks and workload, making limited decisions on sequencing, timing and collaboration, and seeks assistance in setting priorities

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	• Makes low-impact decisions within familiar situations, based on a range of predefined or routine solutions, and evaluates the effectiveness of the outcome • Uses the main features and functions of digital tools to complete work tasks and access information

Range of Conditions

Specifies different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. It is restricted to essential operating conditions and any other variables essential to the work environment.

Type of RF measurement must include:	• determining relative RF power level (in dB) • determining relative RF voltage (in dBmV).
Instruments must include:	• RF signal level meter with and without tone generator • RF leakage detector.

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTBWN306 Use radio frequency measuring instruments

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- comply with site-specific safety requirements and enterprise work health and safety (WHS) processes and procedures
- comply with all job requirements and WHS regulations, standards and work practices
- check and confirm calibration within appropriate dates of tools and instruments
- operate the following equipment:
  - radio frequency (RF) signal level meter (SLM)
  - RF leakage meter
- perform the following RF measurements:
  - determine relative RF power level (in dB)
  - determine relative RF voltage (in dBmV)
  - determine RF signal quality (MER and BER).

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- instruments used in measuring RF frequencies including:
  - RF signal level meter with and without tone generator
  - RF leakage detector
- types of RF measurements and their respective interpretation for RF frequencies including:
  - determining relative RF power level (in dB)

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    - determining relative RF voltage (in dBmV)
- consequences of poorly terminated RF connections
- data recording using the unit decibels (in dBmV)
- variations between RF connector adaptor types
- potential WHS hazards, risks and control measures when working with RF frequency measuring equipment
- RF industry spectrum and limits, and allocations.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s where measuring instruments can be used
- plant, tools and equipment currently used in industry
- relevant regulatory and equipment documentation that impacts on work activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTBWN307 Use optical measuring instruments

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to set up and use hand-held optical communications instruments to perform installations, upgrades and fault-finding on optical equipment.

It applies to telecommunications lines workers who **only** use hand-held optical measuring instruments.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Broadband and Wireless Networks

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to use optical measuring instruments	1.1 Obtain approval for site access with customer or site owner prior to site entry 1.2 Identify purpose of test and type of optical measurement required 1.3 Select appropriate tools and instruments according to required measurement 1.4 Check test instruments to ensure calibration is within acceptable time frames 1.5 Identify safety hazards, assess risks and implement risk control measures in consultation with appropriate personnel

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Elements	Performance Criteria
2. Conduct optical measurements	2.1 Set up test equipment according to manufacturer and enterprise instructions, and safe industry practices 2.2 Test optical patch cords are functional 2.3 Inspect and clean optical connectors 2.4 Use appropriate testing techniques to assess overall system performance 2.5 Record and interpret test results, and compare with standard test specifications
3. Complete optical measurement process	3.1 Make recommendations, based on test result interpretations, to achieve optimum performance 3.2 Notify customer of work completion 3.3 Clean work area and make safe according to enterprise procedures

Foundation Skills

Skill	Description
Reading	• Reads and interprets plans, specifications, instructions and other documentation from a variety of sources and consolidates information to determine requirements • Interprets and consolidates test results and data from a range of sources, against defined requirements
Writing	• Accurately records and completes enterprise documents and correspondence using clear language and correct spelling, grammar and terminology
Oral Communication	• Participates in verbal exchanges with key personnel using appropriate, clear and detailed language to exchange information, ideas or solutions • Uses listening and questioning skills to confirm understanding of requirements
Numeracy	• Performs mathematical calculations to check, interpret and confirm results of system tests
Navigate the world of work	• Complies with explicit policies and procedures • Explores and implements where identified the implicit expectations of policies and procedures
Interact with others	• Uses a range of accepted practices for communicating in a work environment • Complies with work instructions and contributes effectively to work group discussions

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Skill	Description
Get the work done	• Plans and implements routine tasks and workload, making decisions on sequencing, timing and collaboration, and seeks assistance in setting priorities • Makes decisions within familiar situations, based on a range of predefined or routine solutions, and evaluates the effectiveness of the outcome • Uses the main features and functions of digital tools to complete work tasks and access information

Range of Conditions

Specifies different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. It is restricted to essential operating conditions and any other variables essential to the work environment.

Type of optical measurement must include:	• detecting the presence of an active optical network terminal (ONT) • determining absolute optical power (in dBm) • determining insertion loss (in dB) • determining relative optical power level (in dB)
Instruments must include:	• hand-held optical power meter • hand-held optical source • handheld optical fibre identifier (OFI-FTTx) • active optical network termination (ONT) detector • optical loss test set (OLTS) • passive optical network (PON) meter

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTBWN307 Use optical measuring instruments

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- comply with all job requirements and work health and safety (WHS) regulations, standards and work practices
- confirm calibration within appropriate dates of instruments
- operate the following equipment:
  - hand-held optical power meter
  - hand-held optical source
  - handheld optical fibre identifier (OFI-FTTx)
  - active optical network termination (ONT) detector
  - optical loss test set (OLTS)
  - passive optical network (PON) meter
- perform the following optical measurements:
  - detect the presence of an active ONT
  - determine absolute optical power (in dBm)
  - determine insertion loss (in dB)
  - determine relative optical power level (in dB).

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- site-specific safety requirements and enterprise WHS processes and procedures
- instruments used in measuring optical power levels including:

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  - hand-held optical power meter
  - hand-held optical source
  - handheld OFI-FTTx
  - active ONT detector
  - OLTS
  - PON meter
- types of measurements and their respective interpretation for optical wavelengths
- consequences of mating contaminated optical connectors
- data recording using unit decibels (dBm)
- variations between optical connector adaptor types
- optical spectrum limits and allocations
- safe handling procedures with optical fibres.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s where measuring instruments can be used
- plant, tools and equipment currently used in industry
- relevant regulatory and equipment documentation that impacts on work activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTBWN308 Work safely on live optical fibre installations

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Release 5.0.

Application

This unit describes the skills and knowledge required to work safely on a live optical fibre installation to test and commission a wavelength division multiplexing (WDM) system and to connect a splitter for fibre to the x (FTTx) deployment.

It applies to fibre technicians who engage in safe work practices as members of a team using emerging technologies to deliver very high-speed broadband capacity through the access network for the national broadband network (NBN) initiative.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

ICTBWN307 Use optical measuring instruments

ICTWHS204 Follow work health and safety and environmental policy and procedures

Unit Sector

Telecommunications – Broadband and Wireless Networks

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Set up and prepare to work with live fibre	1.1 Scope work by obtaining project plan from appropriate personnel, and arrange for site access to comply with security arrangements 1.2 Identify hazards, assess work health and safety (WHS) risks, and

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Elements	Performance Criteria
	implement control measures according to workplace procedures 1.3 Notify appropriate personnel of identified worksite safety hazards 1.4 Determine FTTx equipment, components of optical distribution network (ODN) and WDM components, from project plan, for testing and commissioning 1.5 Obtain required tools, safety equipment and materials to perform tasks safely and efficiently 1.6 Select and use required personal protective equipment, and make site safe and secure for commissioning work
2. Connect splitter input fibre to feeder cable	2.1 Identify and avoid disconnection of other services 2.2 Monitor implementation of control measures and revise as necessary 2.3 Locate feeder fibre port to be connected 2.4 Ensure power is turned off at source 2.5 Connect connectorised splitter input fibres according to manufacturer specifications 2.6 Arrange for power to be turned back on to newly connected feeder port
3. Perform live WDM commission testing of ODN installation used in FTTx network	3.1 Locate appropriate test points in ODN from manufacturer instructions for WDM testing 3.2 Test live wavelengths for WDM tests according to safety precautions 3.3 Test optical signal strengths for operating wavelengths incoming into optical network termination (ONT) and determine if signal strengths are within range of acceptable power levels 3.4 Test losses between WDM outputs and individual line multiplexers (LM) for each wavelength, and determine if within maximum and minimum power losses 3.5 Conduct all manufacturer specified acceptance tests 3.6 Record and tabulate all test results for commissioning requirements
4. Complete installation process	4.1 Seal and secure any enclosures and cabinets 4.2 Remove waste and debris from worksite and dispose of according to environmental requirements 4.3 Notify appropriate personnel of job completion and obtain sign-off

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Oral Communication	• Participates in verbal exchanges with key personnel using appropriate, clear and detailed language to exchange information, ideas or solutions
Numeracy	• Performs mathematical calculations to check, interpret and confirm results of system tests
Navigate the world of work	• Complies with explicit policies and procedures
Interact with others	• Complies with work instructions and contributes to work group discussions using accepted conventions • Supervises other cablers in training
Get the work done	• Plans and implements routine tasks and workload, making limited decisions on sequencing, timing and collaboration, and seeks assistance in setting priorities • Uses the main features and functions of digital tools to complete work tasks and access information

Range of Conditions

Specifies different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. It is restricted to essential operating conditions and any other variables essential to the work environment.

Operating wavelengths must include:	• 1310 nm • 1490 nm • 1550 nm.
Range of acceptable power levels must include:	• -20 to + 2 dBm @ 1310 nm • -26 to -6 dBm @ 1490 nm • -11.5 to +5 dBm @ 1550 nm.
Maximum and minimum power losses must include:	• 23.3 dB to 15.0 dB @1310 nm • 21.6 dB to 8.0 dB @1490 nm • 20.9 dB to 9.5 dB @1550 nm.
Acceptance tests must include:	• delay • dispersion

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	• optical attenuation and loss measurements • optical power levels • phase.

Unit Mapping Information

No equivalent unit. Supersedes and is not equivalent to ICTBWN304 Work safely with live fibre to test the x installation.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTBWN308 Work safely on live optical fibre installations

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Release 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria and foundations skills, and to:

- comply with all job requirements and work health and safety (WHS) regulations, standards and work practices, and environmental requirements
- use optical power test equipment
- evaluate test results
- safely connect input and output optical fibres to the splitter
- conduct live tests measuring optical signals at three wavelength division multiplexing (WDM) wavelengths on optical devices
- conduct acceptance tests for commissioning that cover:
  - delay
  - dispersion
  - optical attenuation and loss measurements
  - optical power levels
  - phase
- complete connection recording.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- legislation, regulations, codes and standards for compliance that impact on work activities
- relevant organisational policies and procedures
- personal safety issues

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- propagation of light in optical communication systems
- role of transmitters and receivers in optical communication systems
- critical aspects of site engineering
- specific WHS risks and controls relating to the handling of optical fibre and the use of laser light sources
- WDM applications.

Assessment Conditions

This unit of competency falls into the definition of high risk work and should be delivered and assessed in accordance with the national standard.

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- a WDM system and relevant optical splitter
- tools, equipment and personal protective equipment currently used in industry
- relevant regulatory and equipment documentation that impacts on work activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards. Refer also to the *Requirements for assessors* of high risk units in the ICT Information and Communications Technology Training Package Companion Volume Implementation Guide.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTBWN309 Perform tests on optical communication system and components

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to test optical communication systems and components in the field using portable test instruments.

It applies to installation contractors, technical staff and field officers from telecommunications service providers or other private and public organisations or regulatory authorities.

These workers combine technical skills with organisational and administrative skills when working on broadband passive optical networks (PON), fibre to the x (FTTx) networks, hybrid fibre coaxial (HFC) networks and dense wavelength division multiplexing (DWDM) systems during installation, maintenance, commissioning and troubleshooting phases.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Broadband and Wireless Networks

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to use optical measuring instruments	1.1 Notify client about site access, security arrangements and location details for optical system and test purpose 1.2 Identify site hazards and notify appropriate personnel to make site safe according to enterprise requirements 1.3 Devise and implement risk control and safety measures when using

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	high power laser test instruments and optical time-domain reflectometer (OTDR) associated with launch fibres, patch cords or enclosure adaptors 1.4 Prepare testing plan in consultation with client, indicating type of measurement at nominated wavelength, based on equipment specifications 1.5 Select appropriate tools and test instruments according to required measurement and enterprise practice
2. Conduct optical measurements	2.1 Set up test instrument according to manufacturer instructions, work health and safety (WHS) and environmental requirements 2.2 Test patch cords and/or launch/receive fibres are functional 2.3 Inspect and clean optical connectors 2.4 Use appropriate testing techniques to assess performance of optical system or component 2.5 Record test results and compare with standard test specifications according to manufacturer and enterprise guidelines 2.6 Evaluate test results and report on functionality of optical component or equipment, and performance of optical system
3. Complete optical measurement process	3.1 Make recommendations, based on test result interpretations, about optimising component and system performance 3.2 Clean work site and make safe according to enterprise requirements and customer satisfaction 3.3 Notify appropriate personnel of job completion for sign off and present test documentation, according to enterprise requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	**Description**
Reading	• Interprets information from relevant sources to plan and identify all job requirements
Writing	• Accurately completes relevant reports and documentation using clear and technically specific language
Oral Communication	• Uses listening and questioning skills to confirm understanding of requirements, and participates in a verbal exchange of ideas and solutions • Uses appropriate, detailed and clear language to address key

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	personnel and clients
Numeracy	• Performs mathematical calculations to check, interpret and confirm results of system tests
Navigate the world of work	• Complies with explicit policies and procedures, and explores and implements, where identified, the implicit expectations of policies and procedures • Understands roles and responsibilities for task and makes basic decisions about work completion parameters
Interact with others	• Uses a limited range of accepted practices for communicating in a work environment • Recognises common cultural and other differences of people in the work context and accommodates these differences appropriately
Get the work done	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes • Makes low-impact decisions within familiar situations, based on a range of predefined or routine solutions and evaluates the effectiveness of the outcome

Range of Conditions

Specifies different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are *included. It is restricted to essential operating conditions and any other variables essential to the work environment.*

Instruments/devices to be used must include:	• laser light source including visual laser light source • laser power meter • passive optical network (PON) meter • optical time domain reflectometer (OTDR)
Optical measurements to be taken and recorded must include:	• optical power levels • insertion loss of a passive device • end-to-end fibre loss (bi-directional) • splice loss • distance to fault, event, end of fibre using an (OTDR)

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Unit Mapping Information

No equivalent unit. Supersedes and is not equivalent to ICTBWN301 Perform tests on optical communication system and components.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTBWN309 Perform tests on optical communication system and components

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate, on two occasions, the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- carry out work according to job specifications and work health and safety (WHS) regulations
- determine and plan optical tests and measurements
- use the following optical measuring instruments and devices:
  - laser light source including visual laser light source
  - laser power meter
  - passive optical network (PON) meter
  - optical time domain reflectometer (OTDR)
- perform and record optical measurements for:
  - optical power levels
  - insertion loss of a passive device
  - end-to-end fibre loss (bi-directional)
  - splice loss
  - distance to fault, event, end of fibre using an (OTDR)
- assess and make recommendations from the test results
- document and present test outcomes.

Knowledge Evidence

The candidate must be able to demonstrate the knowledge required for the elements, performance criteria, and foundation skills, which includes knowledge about:

- legislation, regulations, codes and standards that impact on work activities
- consequences of mating contaminated optical connectors
- downstream and upstream signals

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- dense wavelength division multiplexing (DWDM) metro and long\--haul system architecture
- hybrid fibre coaxial (HFC) architecture (optical section)
- logarithmic power levels (decibels and dBm)
- optical connector types
- optical fibre and laser safety, practices, handling and application
- optical spectrum limits and wavelengths used in various applications and the International Telecommunications Union (ITU) grid
- role of optical transmitters and receivers
- passive optical network (PON) architecture
- transmission system line rates:
  - optical ethernet
  - synchronous digital hierarchy (SDH)
- wavelength division multiplexing (WDM), coarse wavelength division multiplexing (CWDM) and DWDM principles, and optical multiplexers.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s where installation of supporting infrastructure can be conducted
- plant, tools and equipment currently used in industry
- relevant regulatory and equipment documentation that impacts on work activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL206 Alter services to existing cable system

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes skills and knowledge required to alter existing services to a voice or data cable system within a client's premises and use formal documentation procedures.

It applies to technical staff who alter services to existing cable systems for indoor and outdoor installation within domestic, commercial or industrial installations of communications applications including digital and analog, telephony, data, video, digital broadcasting, computer networks, local area networks (LAN), wide area networks (WAN) and multimedia.

All client cabling work in the telecommunications, fire, security and data industries must be performed by a registered cabler. All cablers are required to register with an Australian Communications and Media Authority (ACMA) accredited registrar.

Unit Sector

Telecommunications – cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to alter services to existing cable	1.1 Arrange access to site according to client instructions and required procedures

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ELEMENT	PERFORMANCE CRITERIA
system	1.2 Survey site to determine system alteration requirements to existing cable system 1.3 Inform appropriate personnel of identified hazards on worksite 1.4 Organise equipment and materials to meet required industry standards and ensure compatibility with existing system
2. Alter cable system	2.1 Follow work health and safety (WHS) and environmental requirements for given work and according to industry standards 2.2 Alter cabling system, conforming to client system specifications and according to industry standards and relevant legislation, codes, regulations and standards
3. Restore and test cable system	3.1 Confirm compatibility of alterations with existing cabling systems and client equipment 3.2 Test new work in isolation and when integrated with existing cabling systems and client equipment 3.3 Rectify any cabling faults or escalate client equipment faults to authorised person
4. Complete records and clean up site	4.1 Update plans and documents to show revised cabling systems accurately and clearly, or create new plans as appropriate 4.2 Remove installation waste and debris from worksite and dispose of according to environmental requirements to maintain safe worksite conditions 4.3 Reinstate site according to client and company requirements 4.4 Complete requisite Telecommunications Advice Form and sign off with client to record satisfaction

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	• Recognises when unknown words are essential to meaning and uses a range of decoding strategies to identify them
Writing	• Uses a legible handwriting style or a computer font appropriate to the audience and purpose

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Oral Communication	• Demonstrates awareness of choices for register, especially in situations that are familiar
Navigate the world of work	• Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work context, and draws attention to any issues that may affect self or others • Recognises and follows explicit and implicit protocols and meets expectations associated with own role
Get the work done	• Implements actions as per plan, making slight adjustments if necessary, and addressing some unexpected terms • Automatically implements standard procedures for routine decisions

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTCBL206 Alter services to existing cable system (Release 2)	ICTCBL206 Alter services to existing cable system (Release 2)	Updates to performance evidence and knowledge evidence. Updates to template to apply consistent format between units.	Equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL206 Alter services to existing cable system

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- determine alteration requirements and document specifications and cable plan
- identify conductor types in, or adjacent to, telecommunications work
- alter, restore and test cable system according to industry standards
- rectify cable faults
- complete documentation to industry and company standards
- comply with all related work health and safety (WHS) requirements and work practices.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- Australian Communications and Media Authority (ACMA) Competency Requirements for Telecommunications Cabling Provider Rules
- required legislation, codes of practice and other formal agreements that impact on the work activity
- a range of cabling options for customer premises including optical and coaxial
- features and operating requirements of test equipment

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- information required to operate equipment according to a test specification
- manufacturer's requirements for safe operation of equipment
- specific WHS requirements relating to the activity and site conditions, test methods and performance requirements
- test methods and performance requirements
- typical cable systems
- common types of alterations that can be expected for existing cable systems
- typical issues, hazards, access difficulties and challenges that occur on site.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- special purpose tools, equipment and materials
- testing equipment currently used in industry
- regulatory and equipment documentation that impacts on alteration activities.

Note: Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Refer to the ICT Implementation Guide Companion Volume for recommended assessor details.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL210 Install a telecommunications service to a building

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to install a telecommunications service to a building to provide a new service or a service upgrade.

It applies to individuals who work in technical roles that require bringing a telecommunications service from the broader network to a client's premises using metallic or optical cable or wireless connection.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Unit Sector

Telecommunications – cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare service installation	1.1 Arrange access to site with client and obtain job specifications 1.2 Notify supervisor of identified safety hazards at worksite

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ELEMENT	PERFORMANCE CRITERIA
	according to work health and safety (WHS) and environmental requirements 1.3 Use installation specifications to determine type of services, network cables and equipment required for installation 1.4 Select cables and equipment that comply with functionality and compatibility of existing installation 1.5 Select and obtain tools and equipment to carry out installation activity
2. Install cable and equipment to building	2.1 Locate, connect and check cables at entry into network for transmission quality and continuity where service to building exists 2.2 Install cable and equipment, and seal cable entry to building in safe manner according to installation plans and Australian Communications and Media Authority (ACMA) standards 2.3 Test overall functionality of new service to meet installation specifications 2.4 Rectify faults if required and minimise interruption to existing service in agreement with client 2.5 Install lightning protection, where required, according to enterprise guidelines and industry practice
3. Complete records and clean up site	3.1 Label cable pairs clearly to provide accurate identification according to manufacturer's, industry and client standards 3.2 Update records and plans with installation details to provide accurate record according to industry codes of practice and current Australian Standards 3.3 Remove installation waste and debris from worksite and dispose of according to environmental requirements to maintain safe worksite conditions 3.4 Complete Telecommunications Cabling Advice (TCA) forms and present to client to obtain sign off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Description

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Reading	• Interprets textual information from relevant sources to identify relevant and key information
Writing	• Uses clear, specific and industry related terminology to complete workplace documentation
Oral Communication	• Articulates clearly using appropriate language for the environment • Uses listening and questioning techniques to confirm understanding
Numeracy	• Takes readings and measurements and interprets results
Navigate the world of work	• Complies with explicit policies, procedures and legislative requirements relevant to own role
Interact with others	• Identifies and follows accepted communication practices and protocols when liaising with clients, internal and external personnel on technical and operational matters
Get the work done	• Determines job sequence and works logically and systematically to undertake clearly defined tasks • Analyses task requirements to decide on appropriate equipment and practices • Applies standard diagnostic practices to identify and rectify faults

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTCBL210 Install a telecommunications service to a building (Release 2)	ICTCBL210 Install a telecommunications service to a building (Release 1)	Updates to element knowledge evidence and foundation skills. Updates to template to apply consistent format between units.	Equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL210 Install a telecommunications service to a building

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- prepare and install cable and equipment to a building complying with Australian Communications and Media Authority (ACMA), enterprise and government regulations
- conduct tests related to transmission quality and continuity of cables at network entry point
- label and document installation work, complying with industry codes of practice
- comply with all related work health and safety (WHS) requirements and work practices.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- information required to operate equipment according to a test specification
- features and operating requirements of test equipment
- legislation, codes of practice and other formal agreements that impact on the work activity
- manufacturer’s requirements for safe operation of equipment
- WHS requirements and work practices associated with cable provision, including:
  - adequate warning signs

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  - protective clothing and personal safety items
  - safety devices
- test methods and performance requirements
- typical issues and challenges that occur on site.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- sites where telecommunications services may be installed
- installation and testing equipment currently used in industry
- relevant regulatory and equipment documentation that impacts on installation activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL239 Install customer cable support systems

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to install support systems for cable infrastructure for new installations or upgrades to existing networks in domestic, commercial and industrial premises.

It applies to individuals who work in technical roles planning cable routes and selecting and installing support structures for communications applications including digital and analog, telephony, data, video, digital broadcasting, computer networks, local area networks (LANs), wide area networks (WANs) and multimedia.

Licensing, legislative, regulatory and certification requirements apply to telecommunications systems. All customer cabling work in the telecommunications, fire, security and data industries must be performed by a registered cabler. All cablers are required to register with an Australian Communications and Media Authority (ACMA) accredited registrar.

Unit Sector

Telecommunications – Cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare cable support installation	1.1 Access site according to customer requirements, required procedures and site security arrangements 1.2 Confirm site capacities for storage and location of cable feeders or establish alternative methods 1.3 Determine customer specifications, and manufacturer and enterprise requirements for cable support 1.4 Notify appropriate personnel of identified safety hazards at cabling

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ELEMENT	PERFORMANCE CRITERIA
	worksite 1.5 Plan cable route, identifying and avoiding other services and remote power feeding services operating at above telecommunications network voltage (TNV) on site in commercial buildings 1.6 Select tools and materials for installation of support system from work specifications and schedules
2. Determine cable routes	2.1 Review relevant plans and verify cable locations 2.2 Select cable routes appropriate to location of building services, providing access to all outlets and enabling cable to be supported to outlet point 2.3 Plan safe and efficient installation by accurately identifying structural building requirements and site constraints 2.4 Identify cable and services segregation clearances to ensure cable route complies with manufacturer specifications, enterprise and legislative requirements, and industry codes of practice
3. Determine support method	3.1 Select appropriate support system for planned cable route and identified site constraints 3.2 Prepare support system for capability to meet planned concentration of cable in any location to facilitate ready access for maintenance and to allow for future expansion
4. Mark out and install fixings and support structure	4.1 Mark out and install fixings and structures securely in a safe manner to manufacturer specifications, ensuring cable weight can be supported in all operating conditions 4.2 Align support structure correctly to enable cable to be installed evenly, in sequence and without damage 4.3 Install protective earthing to industry standards 4.4 Conduct work with minimal disruption to ongoing customer activity
5. Complete support installation	5.1 Check and adjust installed supports to ensure cable will not be exposed to damage during installation and operation 5.2 Remove installation waste and debris from worksite and dispose of according to environmental requirements to maintain safe worksite conditions 5.3 Complete enterprise documentation to record work completed

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Interprets textual information from relevant sources to identify relevant and key information
Writing	• Uses clear, specific and industry-related terminology to complete workplace documentation
Oral Communication	• Uses clear language and concepts, and tone and pace appropriate for the audience and purpose
Numeracy	• Takes readings and measurements and interprets results
Navigate the world of work	• Complies with explicit policies, procedures and legislative requirements relevant to own role
Interact with others	• Identifies and follows accepted communication practices and protocols when liaising with internal and external personnel on technical and operational matters
Get the work done	• Determines job sequence and works logically and systematically to undertake clearly defined tasks • Analyses task requirements to decide on appropriate equipment and practices • Selects and uses appropriate tools and equipment to perform tasks

Unit Mapping Information

ICTCBL239 Install customer cable support systems supersedes and is equivalent to ICTCBL201 Install customer cable support systems.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL239 Install customer cable support systems

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- interpret plans and schematic drawings to verify cable layout
- install three different support structures:
  - catenary wire
  - ducts and/or trays
  - frame back-mounts
- comply with all related work health and safety (WHS) and environmental requirements.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- building construction methods for commercial buildings as they relate to routing cables
- features and operating requirements of cable installation equipment
- services that may impact on cable installations
- cable installation support methods and their performance features
- legislation, regulations, codes, standards, rules and other formal agreements that impact on the work activity, in particular:
  - wiring rules
  - communications cabling manual
  - mandatory and voluntary technical standards
- typical safety issues and challenges that occur on a commercial installation site
- cable types – purpose, construction, characteristics

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- cable screening
- recognition of colour
- basic telephony including operation.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s where customer cable support systems can be installed
- equipment currently used in industry
- relevant regulatory and equipment documentation that impacts on cable installation activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer also to the *Requirements for assessors* in the ICT Information and Communications Technology Training Package Companion Volume Implementation Guide.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL240 Place and secure customer cable

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to install customer cable infrastructure. It involves selecting cable route, setting up cable dispensers, and placing and securing cable.

It applies to individuals who work in technical roles and who may be required to do new installations or to upgrade existing networks in domestic, commercial and industrial premises. Communications applications include digital and analog, telephony, data, video, digital broadcasting, computer networks, local area networks (LANs), wide area networks (WANs) and multimedia.

Licensing, legislative, regulatory and certification requirements apply to telecommunications systems. All customer cabling work in the telecommunications, fire, security and data industries must be performed by a registered cabler. All cablers are required to register with an Australian Communications and Media Authority (ACMA) accredited registrar.

Unit Sector

Telecommunications – Cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for task and identify cable route	1.1 Arrange access to site according to customer instructions, required procedures and site security arrangements 1.2 Notify appropriate personnel of identified safety hazards at cabling worksite 1.3 Plan cable route, identifying and avoiding other services and remote power feeding services operating at above telecommunications network voltage (TNV) on site in commercial buildings

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Select cable route to maintain required clearances and segregations according to cable plan and relevant industry standards 1.5 Confirm cable route and requirements with customer 1.6 Select tools, equipment and cables for installation of support system from work specifications and schedules
2. Set-up cable dispensers	2.1 Determine feeder locations to minimise wastage of cable and efficiency 2.2 Set-up feeders in locations that provide ease of access during hauling of cable 2.3 Secure feeder locations to minimise safety risks during installation 2.4 Label hauling end of cable with unique identifier prior to placement
3. Install cable	3.1 Haul and place cable in safe manner within clearances required by industry standards, and manufacturer and work specifications 3.2 Place cable in neat, orderly and methodical manner, allowing sufficient excess at cable ends to facilitate termination 3.3 Inspect cable to maintain separations according to regulations 3.4 Install barriers to achieve separations where sufficient spatial separation cannot be met with other services 3.5 Install and trim, securing anchors promptly to restrain cable movement according to manufacturer specifications
4. Complete cable installation	4.1 Update records and cable plans promptly and accurately 4.2 Store records and plans according to customer and enterprise requirements 4.3 Remove installation waste and debris from worksite and dispose of according to environmental requirements to maintain safe worksite conditions

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Interprets textual information from relevant sources to identify relevant and key information

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	• Reads and interprets plans to help to determine cable layout
Writing	• Uses clear, specific and industry related terminology to complete workplace documentation
Oral Communication	• Provides information using appropriate language for the environment and purpose • Uses listening and questioning techniques to confirm understanding
Numeracy	• Takes readings and measurements and interprets results
Navigate the world of work	• Complies with explicit policies, procedures and legislative requirements relevant to own role
Interact with others	• Identifies and follows accepted communication practices and protocols when liaising with internal and external personnel on technical and operational matters
Get the work done	• Determines job sequence and works logically and systematically to undertake clearly defined tasks • Analyses task requirements to decide on appropriate equipment and practices

Unit Mapping Information

ICTCBL240 Place and secure customer cable supersedes and is equivalent to ICTCBL202 Place and secure customer cable.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL240 Place and secure customer cable

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- comply with all related work health and safety (WHS) requirements and work practices
- plan cable placement and discuss the installation requirements with appropriate personnel
- organise tools, equipment and materials for cable installation according to specifications
- set up cable dispensers for internal or external premises structures or aerial and underground cabling between premises
- haul and install cables on support structures and building faces for both internal and external locations, applying relevant regulations and standards
- install securing products in accordance with manufacturer specifications and industry standards
- complete records and relevant statutory forms.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in elements, performance criteria, and foundation skills, which includes knowledge about:

- legislation, regulations, codes, standards, rules and other formal agreements that impact on cable installation, in particular:
  - wiring rules
  - mandatory and voluntary technical standards
- specific WHS and environmental requirements relating to cable installation and site conditions, including typical safety issues and challenges that occur on cable installation sites

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- construction of cabling in commercial buildings
- cable and services segregation clearances to ensure cable route complies with legislation and industry codes of practice, manufacturer specifications, and enterprise requirements
- features and operating requirements of equipment required to place and secure cable
- information required to operate appropriate equipment according to specifications
- installation methods and performance requirements
- manufacturer requirements for safe operation of equipment
- common methods of hauling cable and typical damage that can occur to cable when it is hauled incorrectly
- purpose, construction, and characteristics of types of cable used in performance evidence
- cable screening types
- recognition of colour codes
- switching systems, including customer switching services, system distribution frames/test point frames, power failures and line interface requirements
- basic telephony, including operation.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s where placing and securing customer cable can be conducted
- equipment currently used in industry
- relevant regulatory and equipment documentation that impacts on cable installation activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer also to the *Requirements for assessors* in the ICT Information and Communications Technology Training Package Companion Volume Implementation Guide.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL241 Terminate metallic conductor customer cable

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to terminate metallic conductor cable or to join cable in a terminating block for a new cable installation or upgrade of cable capacity for an existing network or subsystem, or cabling infrastructure for convergence to next generation networks (NGNs).

It applies to individuals who work in technical roles carrying out indoor and outdoor, domestic, commercial or industrial installations for all communications applications, digital and analog, telephony, data, video, digital broadcasting, computer networks, local area networks (LANs), wide area networks (WANs) and multimedia.

Licensing, legislative, regulatory and certification requirements apply to telecommunications systems. All customer cabling work in the telecommunications, fire, security and data industries must be performed by a registered cabler. All cablers are required to register with an Australian Communications and Media Authority (ACMA) accredited registrar.

Unit Sector

Telecommunications – Cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare cable termination	1.1 Access site according to customer and worksite requirements 1.2 Prepare for cable terminating work according to regulatory environment, cabling environment, cable type, cable identification, termination systems, earthing and protection, and records 1.3 Select correct termination tools and materials for installation 1.4 Notify appropriate personnel of identified safety hazards at

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ELEMENT	PERFORMANCE CRITERIA
	cabling worksite 1.5 Identify remote power feeding services that operate at above telecommunications network voltage (TNV) inside customer premises 1.6 Contact customer where risks with remote power feed are identified 1.7 Remove all contaminants from worksite that may adversely affect termination and prepare worksite to ensure adequate visibility to minimise errors and to reduce eye strain 1.8 Design cable and block location within frame, with capacity for expansion where possible 1.9 Segregate incoming and outgoing cables for ease of access and to minimise overlaying and backtracking of cable
2. Terminate cable	2.1 Remove cable sheath to allow for conductor length and installation requirements 2.2 Fan out cable pair groups to manufacturer coding system to ensure correct terminating sequence and unique identification as required 2.3 Install over-voltage protection devices to all cables with metallic component as required 2.4 Install terminating modules to frame according to manufacturer specifications 2.5 Fan cable pairs neatly to termination equipment to facilitate accurate termination 2.6 Terminate cable using correct tool, according to work health and safety (WHS) and environmental requirements, and manufacturer specifications 2.7 Earth cable shield to manufacturer specifications and industry standards
3. Test termination	3.1 Conduct visual inspection to confirm termination colour code sequence has been followed 3.2 Test termination to satisfy performance specifications and record results as required
4. Complete records and clean-up site	4.1 Label cable pairs clearly to provide an accurate identification according to manufacturer specifications, industry standards and customer requirements 4.2 Update records and plans with cabling details to provide accurate record according to industry codes of practice and current Australian

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ELEMENT	PERFORMANCE CRITERIA
	Standards 4.3 Complete telecommunications cabling advice (TCA) forms 4.4 Remove installation waste and debris from worksite and dispose of according to environmental requirements to maintain safe worksite conditions

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Interprets textual information from relevant sources to identify relevant and key information
Writing	• Uses clear, specific and industry related terminology to complete workplace documentation
Numeracy	• Takes readings and measurements and interprets results
Navigate the world of work	• Complies with explicit policies, procedures and legislative requirements relevant to own role
Interact with others	• Identifies and follows accepted communication practices and protocols when liaising with customers, colleagues or supervisors
Get the work done	• Determines job sequence and works logically and systematically to undertake clearly defined tasks • Analyses task requirements to decide on appropriate equipment and practices

Unit Mapping Information

ICTCBL241 Terminate metallic conductor customer cable supersedes and is equivalent to ICTCBL203 Terminate metallic conductor customer cable.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL241 Terminate metallic conductor customer cable

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- terminate systems at both distributor and outlet locations
- terminate one jumperable distributor (campus distributor or building distributor) with a capacity of 100 pair or greater and one non-jumperable distributor (local distributor) and a patch panel
- terminate at least one 50 pair, one 4 pair ethernet unshielded twisted pair (UTP) data cable and one ethernet shielded twisted pair (STP) data cable, and accurately complete installation records, drawing alterations and compliance forms
- comply with all related work health and safety (WHS) requirements and work practices
- use correct methods to terminate a range of cables
- conduct and interpret cable test results on a minimum of three different lead-in faults
- update records and plans to show cable locations according to industry standards.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- legislation, regulations, codes, standards and rules that impact on work, in particular:
  - AS/NZS 3000:2018 Electrical installations known as the Australian/New Zealand Wiring Rules.
  - mandatory and voluntary technical standards
- specific WHS and environmental requirements relating to the activity and site conditions, including typical safety issues and challenges that occur on site
- purpose, construction, and characteristics of types of cable used in performance evidence

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- recognition of colour
- basic telephony including operations
- strategies to manage cabling infrastructure when terminating cables
- features and operating requirements of testing
- operation of termination tools to manufacturer guidelines
- procedures for installing and maintaining cabling products in line with manufacturer guidelines
- termination methods and performance requirements.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s where metallic conductor cable can be terminated
- colour codes for visual inspections or wire-mappers for 4 pair cable tests
- relevant regulatory and cabling documentation that impacts on cable terminating activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer also to the *Requirements for assessors* in the ICT Information and Communications Technology Training Package Companion Volume Implementation Guide.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL242 Install functional and protective telecommunications earthing system

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to install telecommunications earthing system to metallic frames, utilised for telecommunications systems that include digital and analog, telephony, data, video, digital broadcasting, computer networks, local area networks (LANs), wide area networks (WANs) and multimedia.

It applies to telecommunications technicians and field officers who install indoor or outdoor earthing systems for domestic, small office home office (SOHO), commercial or industrial multi-storey and multi-site locations within customer premises.

Licensing, legislative, regulatory and certification requirements apply to telecommunications earthing systems. All customer cabling work in the telecommunications, fire, security and data industries must be performed by a registered cabler. All cablers are required to register with an Australian Communications and Media Authority (ACMA) accredited registrar.

Unit Sector

Telecommunications – Cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to install telecommunications earthing system	1.1 Access site according to customer and individual site requirements 1.2 Select earth wire for purpose intended according to specifications and current Australian Standards 1.3 Establish location of earthing applications, eliminating risks posed by contact with remote power feeding services

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Select route to minimise interference to system performance and according to safe work practices 1.5 Select earthing materials to comply with relevant industry standards
2. Install and secure earth cable	2.1 Maintain cable separations to meet performance requirements of application environment 2.2 Check earth cable insulation is undamaged to ensure integrity of earth provided 2.3 Connect the main protective earth (PE) cable to the nearest electrical switch board then isolate PE cable, beyond the main distribution frame (MDF) link bar from functional earth and telecommunication reference conductors (TRC) at all times to ensure operation according to industry standards 2.4 Install and secure cable according to work health and safety (WHS) and environmental requirements, manufacturer specifications and industry standards
3. Terminate and test earth cable installation	3.1 Terminate earth with connectors recommended by manufacturer and according to industry standards 3.2 Maintain earth continuity at all times to ensure safe and reliable system operation 3.3 Maintain correct interface requirements with electrical systems according to industry standards 3.4 Test earthing system according to ACMA wiring rules in safe manner 3.5 Rectify earth system faults, as required, prior to re-testing
4. Complete task and documentation	4.1 Label earthing systems according to industry regulations 4.2 Complete documentation, including test records 4.3 Clean up and restore worksite 4.4 Notify customer and obtain sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description

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Skill	Description
Reading	• Recognises when unknown words are essential to meaning and uses a range of decoding strategies to identify them • Recognises the structures and distinguishing features of a range of text types
Writing	• Produces a range of text types (familiar and some unfamiliar) with appropriate structures
Oral Communication	• Demonstrates awareness of choices for register, especially in situations that are familiar
Navigate the world of work	• Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work context, and draws attention to any issues that may affect self or others • Recognises and follows explicit and implicit protocols and meets expectations associated with own role
Get the work done	• Automatically implements standard procedures for routine decisions • Initiates standard procedures when responding to familiar problems within immediate context

Unit Mapping Information

ICTCBL242 Install functional and protective telecommunications earthing system supersedes and is equivalent to ICTCBL204 Install functional and protective telecommunications earthing system.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL242 Install functional and protective telecommunications earthing system

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- evaluate earthing needs for cable systems on customer premises
- determine potential earthing locations
- comply with all related work health and safety (WHS) and environmental requirements and work practices
- determine earth route and support system
- install earth to a backmount, rack or enclosure
- manage remote power feed services.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- legislation, regulations, codes, standards, rules, guidance notes and other formal agreements that impact on work, in particular:
  - wiring rules
  - mandatory and voluntary technical standards
  - Australian Communications and Media Authority (ACMA) competency requirements for Telecommunications Cabling Provider Rules
  - national and state/territory WHS requirements
  - workplace and worksite requirements
- specific WHS and environmental requirements relating to the activity and site conditions, including typical safety issues and challenges that occur on site

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- features and operating requirements of test equipment
- information required to operate equipment according to a test specification
- types of location in which installations may be required
- manufacturer requirements for safe operation of equipment
- test methods and performance requirements
- purpose, construction, and characteristics of types of cable used in performance evidence
- cable screening types
- recognition of colour codes
- electrical earthing applications including electrical bonding and equipotential bonding
- earth systems with functionality including elimination of interference from electromagnetic, radio frequency (RF) and power sources, and reduction of interference from electromagnetic RF and power sources.
- switching systems earthing requirements
- basic telephony including operation.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- special purpose tools, equipment and materials
- a relevant telecommunications earthing system
- cable plans and records.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer also to the *Requirements for assessors* in the ICT Information and Communications Technology Training Package Companion Volume Implementation Guide.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL246 Install, maintain and modify customer premises communications cabling: ACMA Restricted Rule

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 6.0. Release 2 created for editorial corrections.
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to safely install, maintain and modify communications cabling, according to the Australian Communications and Media Authority (ACMA) 'restricted' Cabling Provider Rules, on customer premises for cabling terminated on sockets and network termination devices (NTDs) of indoor and external metallic cable in either aerial or underground situations.

It applies to individuals who connect telecommunications devices including telephony systems, security alarm panels and fire control panels in either a new cable installation or upgrade of cable capacity for an existing network or subsystem for convergence to next generation network (NGN) applications.

Customer premises are typically domestic, small offices, home offices and small businesses. Large commercial and industrial premises are generally excluded, except in special circumstances where the cabling is behind a compliant device and is not via jumperable distributors or patch panels.

Licensing, legislative, regulatory and certification requirements apply to telecommunications systems. All customer cabling work in the telecommunications, fire, security and data industries must be performed by a registered cabler. All cablers are required to register with an ACMA accredited registrar.

Pre-requisite Unit

ICTTEN208 Use electrical skills when working with telecommunications networks

ICTWHS204 Follow work health and safety and environmental policy and procedures

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Unit Sector

Telecommunications – Cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan restricted cabling work	1.1 Identify building infrastructure that places critical constraints on cabling 1.2 Apply organisational strategies to manage other infrastructure in relation to cabling 1.3 Notify appropriate personnel of identified safety hazards at cabling work site
2. Manage remote power feed	2.1 Identify and avoid risks posed by contact with remote power feeding services when performing cabling activity 2.2 Make site safe by identifying remote power feeding services that operate at above telecommunications network voltage (TNV) inside customer premises
3. Install cables and protective earth wires	3.1 Install cables according to manufacturer application specifications, including tension and bending stress requirements 3.2 Identify and avoid sources of possible damage to cable, including hot pipes, sharp edges and cable burn 3.3 Allow sufficient excess at cable ends to facilitate termination 3.4 Place and secure cable to maintain safety and interference segregation according to legislative and industry standards 3.5 Install cable fasteners with correct tension to prevent cable sheath damage or transmission impairment and trimmed flush to prevent risk of personal damage 3.6 Use appropriate underground cable installation techniques associated with minimum depth of cover and segregation from hazardous electrical and other services according to current Australian Standards 3.7 Identify issues surrounding underground cables (excluding blown fibre tube systems) to incorporate a blocking agent within the cable to prevent the ingress of water 3.8 Use appropriate aerial cable installation techniques associated with minimum clearance, segregation from hazardous electrical and other services and minimum height requirements according to current

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ELEMENT	PERFORMANCE CRITERIA
	Australian Standards 3.9 Install over-voltage protection devices to all cable pairs according to Australian Standards, as required, to suppress voltage surges and protect from earth potential rise (EPR) hazards and protectively earth the devices 3.10 Protect earth wire insulation against damage and segregate protective earths according to relevant legislative and industry standards
4. Terminate and test cables and earth wires	4.1 Remove cable sheath to allow for correct termination length and without damage to underlying conductors and their insulation 4.2 Install cable modules according to manufacturer specifications, and cable pairs neatly and sequentially fan for termination 4.3 Terminate conductors according to recommended colour code sequence using appropriate termination tools according to manufacturer specifications 4.4 Earth cable shield, as required, according to manufacturer specifications, relevant industry codes of practice and Australian Standards 4.5 Conduct visual inspection to confirm termination colour code sequence has been followed prior to end-to-end testing of wire and pair termination integrity 4.6 Terminate earth wire according to industry codes of practice and Australian Standards 4.7 Ensure earth wire continuity throughout and observe interface requirements with electrical systems 4.8 Test earthing installation for continuity, insulation resistance and conductive resistance according to industry standards and Australian Standards 4.9 Confirm compatibility of alterations with existing systems and test new work both in isolation and when integrated with existing systems
5. Inspect cable route to ensure correct separations	5.1 Inspect separations along the entirety of the cable route and rectify separations that do not comply with regulations 5.2 Install barriers to achieve separations where sufficient spatial separation cannot be met
6. Create records	6.1 Provide customer with a job sign-off telecommunications cabling advice form at the completion of each cabling task 6.2 Complete NTD record cards for work undertaken

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ELEMENT	PERFORMANCE CRITERIA
7. Monitor work activity	7.1 Supervise unregistered cablers undertaking work in line with scope of own role and organisational procedures 7.2 Ensure cabling activity is according to legislative requirements for safety and network integrity including the relevant Australian Standards

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Recognises and responds to some conventions of complex texts • Recognises when unknown words are essential to meaning and uses a range of decoding strategies to identify them
Writing	• Uses a legible handwriting style or a computer font appropriate to the audience and purpose
Oral Communication	• Demonstrates awareness of choices for register, especially in situations that are familiar
Numeracy	• Relies substantially on hands-on (concrete) and real life materials, personal experience and prior knowledge to make estimations and check the reasonableness of processes • Identifies appropriate tools and uses them to take measurements • Interprets information based on results of technical tests
Navigate the world of work	• Takes personal responsibility for adherence to legal/regulatory responsibilities relevant to own work context, and draws attention to any issues that may affect self or others
Get the work done	• Implements actions as per plan, making slight adjustments if necessary, and addressing some unexpected issues • Automatically implements standard procedures for routine decisions in response to familiar problems

Range of Conditions

Specifies different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. It is restricted to essential operating conditions and any other variables essential to the work environment.

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Termination systems must include:	• network termination device • Australian modular socket • Mode 3 alarm socket • RJ45, RJ12 or RJ11 modular socket (Note: jumperable distributors are not included in this requirement)
Earthing and protection must include:	• earthing for protection • surge suppression

Unit Mapping Information

ICTCBL246 Install, maintain and modify customer premises communications cabling: ACMA Restricted Rule supersedes and is equivalent to ICTCBL236 Install, maintain and modify customer premises communications cabling: ACMA Restricted Rule.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL246 Install, maintain and modify customer premises communications cabling: ACMA Restricted Rule

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 6.0. Release 2 created for editorial corrections.
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- complete a cabling installation and termination for:
  - three different types of telephone sockets:
    - Australian modular socket
    - RJ45, RJ12 or RJ11 modular socket
    - Mode 3 alarm socket
  - one network termination device (NTD), including the completion of TCA1 compliance forms and NTD records
- apply cable conductor identification codes to connector pins
- conduct tests and interpret cable test results
- interpret and apply standards and regulations
- comply with all related work health and safety (WHS) requirements and work practices
- meet Australian Communications and Media Authority's (ACMA) requirements
- install earthing to suit cabling conditions
- identify and rectify faulty cabling
- use appropriate personal protective equipment when performing cabling tasks.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

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Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- legislation, regulations, codes, standards, rules, guidance notes and other formal agreements that impact on work, in particular:
  - Australian Communications and Media Authority (ACMA) Telecommunications Cabling Provider Rules, cabling registrars, cabler registration rules, regulations and standards
  - current Australian Standards including AS/CA S009:2013 Installation requirements for customer cabling (Wiring Rules)
  - national and state/territory WHS requirements
  - workplace and worksite requirements
  - cabling environment, cable type, cable identification, termination systems, earthing and protection, records
  - ACMA certified components list
  - labelling requirements
- basic electrical principles of:
  - insulation, resistance
  - capacitance
  - impedance – as causes of, impedance, attenuation and cross-talk
- cable conductor – types of codes
- customer switching systems and services
- printed circuit boards
- cable screening types
- colour codes
- various cable types, their identifiers, termination systems, separations, support systems and fastening techniques used for communications cabling
- features and operating requirements of recognised cabling specific industry test equipment
- information required to operate equipment according to a test specification
- manufacturer requirements for safe operation of equipment
- test methods and performance requirements
- installation requirements for underground and aerial cables including:
  - minimum depth of cover (below ground)
  - segregation from hazardous electrical and other services
  - earthing requirements
- design parameters for underground cables with regards to the purpose they will serve and the prevention of water ingress.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

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Access is required to:

- site/s on which communications cabling activities can be carried out
- cabling and field equipment currently used in industry
- licensing requirements and other site related documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards. Refer also to the *Requirements for assessors* in the ICT Information and Communications Technology Training Package Companion Volume Implementation Guide.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL247 Install, maintain and modify customer premises communications cabling: ACMA Open Rule

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 6.0. Release 2 created for editorial corrections.
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to safely install, maintain and modify customer premises communications cabling according to the Australian Communications and Media Authority (ACMA) 'open' Cabling Provider Rules for small installations connected to sockets, and larger commercial and industry installations involving many lines, multi-pair cables, backbone cabling, multi-story buildings and advanced termination modules and distributors.

It applies to individuals who provide services in telephony, carrier modems or multiplexers, private modems or data systems operating over a category one or two twisted pair metallic customer cable in a specific customer location. Individuals may install, maintain or modify new cable or upgrade cable capacity either, indoor, external, underground or aerial cabling on private and public property for an existing network or subsystem, or cabling infrastructure for convergence to next generation networks (NGNs).

Licensing, legislative, regulatory and certification requirements apply to telecommunications systems. All customer cabling work in the telecommunications, fire, security and data industries must be performed by a registered cabler. All cablers are required to register with an ACMA accredited registrar.

Where aerial and underground cabling are used to supply services to the public, the specialist competencies as indicated in the *ACMA Cabling Provider Rules – Pathways to cabling registration* publication must be attained to undertake that work.

Pre-requisite Unit

ICTTEN208 Use electrical skills when working with telecommunications networks

ICTWHS204 Follow work health and safety and environmental policy and procedures

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Unit Sector

Telecommunications – Cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Plan open cabling work	1.1 Identify building infrastructure that places critical constraints on cabling 1.2 Apply organisational strategies to manage other infrastructure in relation to cabling 1.3 Notify appropriate personnel of identified safety hazards at cabling worksite
2 Manage remote power feed	2.1 Identify and avoid risks posed by contact with remote power feeding services when performing cabling activity 2.2 Make site safe by identifying remote power feeding services that operate at above telecommunications network voltage (TNV) inside customer premises
3 Install and modify cable support, earthing and termination infrastructure	3.1 Install fixings and cable support structures of adequate strength, safely and aligned with the environment according to manufacturer and customer specifications 3.2 Secure catenary supports to building structure and tension, as required, to ensure cable weight can be carried in operating conditions with interference and safety segregation maintained according to current Australian Standards 3.3 Install protective earthing of metal work to industry standards, as required 3.4 Inspect installed support structure to ensure cable will not be exposed to damage during installation and general operation 3.5 Position terminating equipment and fixing according to industry codes of practice, standards and customer requirements 3.6 Inspect back-mount and outlet layout for compliance to manufacturer specifications, and allow adequate work space for ease of access and avoid overlaying 3.7 Segregate incoming and outgoing cables for ease of access and

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ELEMENT	PERFORMANCE CRITERIA
	avoid overlaying
4 Install cables and earth wires	4.1 Install cables according to manufacturer specifications, including tension and bending stress requirements 4.2 Identify and avoid sources of possible damage to cable, including hot pipes, sharp edges, cable burn, kinks, crushing or stretching 4.3 Allow sufficient excess at cable ends to facilitate termination 4.4 Label telecommunication outlet ends of cable uniquely to match identifier at originating location 4.5 Place and secure cable to maintain safety and interference segregation according to legislative and industry standards 4.6 Install cable fasteners with correct tension, and trim or fit them flush to prevent cable sheath damage, transmission impairment or risk of personal damage 4.7 Use appropriate aerial cable installation techniques associated with supported catenaries in external environment to meet minimum above ground clearances and segregation from hazardous electrical services, according to current Australian Standards 4.8 Use appropriate underground cable installation techniques associated with minimum depth of cover and segregation from hazardous electrical and other services, according to current Australian Standards 4.9 Identify issues surrounding underground cables (excluding blown fibre tube systems) to incorporate a blocking agent within the cable to prevent the ingress of water 4.10 Install over-voltage protection devices to all cable pairs according to current Australian Standards, as required, to suppress voltage surges with the over-voltage devices connected to protective earth 4.11 Conduct a visual inspection to verify telecommunications reference conductor (TRC) / communications earthing system (CES)/earth wire insulation is protected against damage and is segregated according to relevant industry, legislative and Australian Standards
5 Terminate and test cables and earth wires	5.1 Remove cable sheath to allow for correct termination length without damage to underlying conductors and their insulation 5.2 Install terminating modules to different telecommunications cables according to manufacturer specifications, and cable pairs neatly and sequentially fan for termination 5.3 Terminate conductors according to recommended colour code sequence using appropriate termination tools according to manufacturer

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ELEMENT	PERFORMANCE CRITERIA
	specifications 5.4 Earth cable shield, as required, according to manufacturer specifications, relevant industry codes of practice and current Australian Standards 5.5 Conduct visual inspection to confirm termination colour code sequence has been followed prior to end-to-end testing of wire and pair termination integrity 5.6 Terminate earth wires with connectors recommended by manufacturer according to industry codes of practice and current Australian Standards 5.7 Ensure earth wire continuity throughout and observe interface requirements with electrical systems 5.8 Test earthing installation for continuity and conductive resistance according to industry standards 5.9 Confirm compatibility of alterations with existing systems and test new work both in isolation and when integrated with existing systems 5.10 Conduct testing of installed cable continuity after termination
6 Inspect cable route to ensure correct separations	6.1 Inspect separations along the entirety of the cable route and rectify separations that do not comply with regulations 6.2 Install barriers to achieve separations where sufficient spatial separation cannot be met
7 Evaluate earthing needs for cable systems on customer premises	7.1 Locate existing earthing systems in customer premises and analyse earthing needs of cable products 7.2 Calculate upper and lower limits of resistance for a variety of cable system earths using relevant cable characteristics
8 Label earthing systems	8.1 Identify label requirements for telecommunications earthing systems 8.2 Attach label to earthing systems according to industry regulations
9 Create or update cable plans and records	9.1 Document installation details on record sheets and plans, and store according to customer requirements 9.2 Label cable pairs clearly as required to provide an accurate identification according to manufacturer specifications, industry standards and customer requirements 9.3 Record cabling details in cable pair record books to provide an accurate record, according to industry codes of practice and current Australian Standards

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ELEMENT	PERFORMANCE CRITERIA
	9.4 Complete telecommunications cabling advice (TCA) forms
10 Monitor work activity	10.1 Supervise unregistered cablers undertaking work in line with scope of own role and organisational procedures 10.2 Ensure installation and maintenance activity comply with legislative requirements and industry standards for safety and network integrity

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Recognises the structures and distinguishing features of a range of familiar text types
Writing	• Sequences writing to produce cohesive text and uses layout consistent with text type
Oral Communication	• Demonstrates awareness of choices for register, especially in situations that are familiar
Numeracy	• Interprets and comprehends whole and familiar or routine fractions, decimals and percentages when measuring and preparing cables for installation
Navigate the world of work	• Takes personal responsibility for adherence to legal/regulatory responsibilities relevant to own work context, and draws attention to any issues that may affect self or others
Get the work done	• Implements actions as per plan, making slight adjustments if necessary, and addressing some unexpected issues • Automatically implements standard procedures for routine decisions in response to familiar problems

Unit Mapping Information

ICTCBL247 Install, maintain and modify customer premises communications cabling: ACMA Open Rule supersedes and is equivalent to ICTCBL237 Install, maintain and modify customer premises communications cabling: ACMA Open Rule.

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Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL247 Install, maintain and modify customer premises communications cabling: ACMA Open Rule

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 6.0. Release 2 created for editorial corrections.
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- complete a cabling installation and termination for:
  - three different types of telephone sockets:
    - Australian modular socket
    - RJ45, RJ12 or RJ11 modular socket
    - Mode 3 alarm socket
  - one network termination device (NTD), including the completion of TCA1 compliance forms and NTD records
- read and interpret drawings related to cable layouts, outlet location, cable coding system, and identifiers and distributor locations
- comply with all work, health and safety (WHS) requirements and work practices
- meet Australian Communications and Media Authority (ACMA) requirements
- apply cable conductor identification codes to connector pins
- conduct tests and interpret cable test results
- identify the correct telecommunications cable by its colour identifier
- terminate systems at both distributor and outlet locations
- install and terminate two jumperable distributors (campus distributor or building distributor) with a capacity of 100 pair or greater
- terminate one non-jumperable distributor (local distributor)

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- terminate both cable ends for at least one 50 pair cable, 10 or 20 pair cable and one 4 pair data cable, including accurate completion of installation records, drawing alterations and compliance forms
- place cables on support structures and building faces for both internal and external locations
- secure cables with appropriate fasteners for the above locations
- apply work practices that avoid cable damage
- install at least one common type of earthing system used in customer premises for cabling systems
- interpret and apply relevant legislation, regulations, codes, and standards
- install earthing to suit cabling conditions
- identify and rectify faulty cabling
- use appropriate personal protective equipment when performing cabling tasks.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- legislation, regulations, codes, standards, rules, guidance notes and other formal agreements that impact on work, in particular:
  - Australian Communications and Media Authority (ACMA) Telecommunications Cabling Provider Rules, cabling registrars, cabler registration rules, regulations and standards
  - current Australian Standards including AS/CA S009:2013 Installation requirements for customer cabling (Wiring Rules)
  - national and state/territory WHS requirements
  - workplace and worksite requirements
  - cabling environment, cable type, cable identification, termination systems, earthing and protection, records
  - ACMA certified components list
  - labelling requirements
- basic electrical principles of:
  - insulation, resistance
  - capacitance
  - impedance – as causes of, impedance, attenuation and cross-talk
- cable screening types
- colour codes
- cable conductor – types of codes
- customer switching systems and services

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- printed circuit boards
- customer cabling environment for which cabling registration may be required for internal, external, above ground or below ground installation
- information required to operate equipment according to a test specification
- various cable types, their identifiers, termination systems (including jumperable and non-jumperable distributor), separations, support systems and fastening techniques used for telecommunications cabling
- documentation and records required when cabling
- manufacturer requirements for safe operation of equipment
- earthing and protection strategies and technologies relevant to different cabling applications
- test methods and performance requirements
- typical issues and challenges that occur on site
- installation requirements for underground and aerial cables including:
  - minimum depth of cover (below ground)
  - segregation from hazardous electrical and other services
  - earthing requirements
- design parameters for underground cables with regards to the purpose they will serve and the prevention of water ingress
- devices for a range of telecommunications cabling applications, including, ethernet data systems, audio and video systems, security systems and fire protection systems
- integral bearer wires and application according to current Australian Standards
- cable blocking agents used to prevent the ingress of water underground (excluding blown fibre tube systems)
- features of cables designed for underground use that may be laid in conduit trenches or directly buried
- responsibilities and process for communications installation works.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s on which communications cabling activities can be carried out
- two jumperable distributors (campus distributor or building distributor) with a capacity of 100 pair or greater
- one non-jumperable distributor (LD) and a patch panel
- a 50 pair and 4 pair and one ethernet cable
- cabling and field equipment currently used in industry
- relevant regulatory and site related documentation.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards. Refer also to the *Requirements for assessors* in the ICT Information and Communications Technology Training Package Companion Volume Implementation Guide.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL248 Install and terminate hard-line coaxial cable

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to install, splice and terminate hard-line coaxial cable in the customer access network (CAN) environment for emerging technologies.

It applies to technical staff who splice and terminate hard-line coaxial cable used in all telecommunications applications including convergence technologies of telephony, data, video and multimedia as part of next generation networks (NGNs).

Licensing, legislative, regulatory and certification requirements apply to telecommunications earthing systems. Refer to the ICT Information and Communications Technology Companion Volume Implementation Guide or the relevant regulator for details of licensing, legislative or certification requirements.

Unit Sector

Telecommunications – Cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to install and splice hard-line coaxial cable	1.1 Confirm site access approval prior to site entry and comply with site security arrangements 1.2 Read and interpret installation specifications and physical conditions at site to determine job layout 1.3 Locate and identify adjoining other services according to industry guidelines, and work health and safety (WHS) practices 1.4 Test for and respond to presence of dangerous gases in underground enclosures according to industry guidelines

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ELEMENT	PERFORMANCE CRITERIA
	1.5 Test relevant aerial metallic fittings for live voltage and respond according to industry guidelines 1.6 Install equipotential bonding according to design 1.7 Undertake approved alterations to design, as required, according to industry guidelines 1.8 Select appropriate hard-line coaxial cable type according to installation requirements 1.9 Select and obtain all materials required for cable termination including passive and active devices and connectors
2. Verify placement and secure coaxial cable	2.1 Use safety equipment to protect self and public according to industry guidelines and WHS requirements 2.2 Protect integrity of coaxial cable (sheath, shield and centre conductor) to ensure no loss of performance 2.3 Form cable into position with sufficient lengths by using approved forming tools that allow termination and maintain minimum bend radius according to manufacturer specifications 2.4 Follow installation design to install cable safely without damage to cable and ensure cable flow in pits and manholes is according to carrier standards and work instructions 2.5 Maintain radio frequency (RF) signal strength by installing cable lengths within manufacturer or design specifications 2.6 Locate securing hardware to reduce cumulative effect on cable wave shape properties 2.7 Use correct lashing machine and techniques to attach aerial cable to catenary wire
3. Splice coaxial cable	3.1 Strip and core hard-line coaxial cable, according to specifications, to required length using appropriate tools 3.2 Select appropriate kit to match type of hard-line coaxial cable in use and splice according to manufacturer recommendations 3.3 Seal all splices according to industry specifications
4. Terminate coaxial cable	4.1 Prepare coaxial cable for termination, according to specifications, using appropriate tools 4.2 Select connectors to match type of coaxial cable in use and terminate according to industry standards 4.3 Install network device chassis/housing in correct orientation according to design 4.4 Prepare centre pins of cable and connector, and cut according to

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ELEMENT	PERFORMANCE CRITERIA
	vendor specifications 4.5 Terminate connectors to torque according to manufacturer recommendations to prevent RF leakage, and ensure seizure screws are tightened 4.6 Seal all terminations according to industry specifications
5. Complete installation operation	5.1 Place cables in pit and/or mount on aerial strand according to manufacturer instructions and industry guidelines, and check that no safety hazards are evident 5.2 Attach fitted off device aerially or underground according to manufacturer specifications or work instructions 5.3 Reinstate site, and remove waste and debris for disposal according to environmental requirements and maintain safe worksite conditions
6. Complete installation administration	6.1 Complete reports according to telecommunications carrier network policy 6.2 Update plans and records using appropriate symbols with details of installation

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Reads familiar texts fluently, automatically recognising most everyday words and some specialised vocabulary
Writing	• Sequences writing to produce cohesive text and uses layout consistent with text type
Oral Communication	• Demonstrates awareness of choices for register, especially in situations that are familiar
Numeracy	• Interprets and comprehends whole numbers and familiar or routine fractions, decimals and percentages • Selects and uses appropriate tools, hand-held devices, computers and technological processes
Navigate the world of work	• Takes responsibility for decisions regarding when and how to complete tasks, and coordinate with or delegate to others • Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work context, and draws attention to any

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Skill	Description
	issues that may affect self or others
Get the work done	• Implements actions as per plan, makes slight adjustments if necessary, and addresses unexpected issues • Automatically implements standard procedures for routine decisions

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL248 Install and terminate hard-line coaxial cable

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- determine installation requirements
- prepare site for hard-line coaxial cable installation
- identify hard-line coaxial cable types
- perform an in-line splice
- terminate hard-line coaxial cable using specialised hand or power tools and equipment
- terminate hard-line coaxial cable to network devices using:
  - a pin connector
  - 90- or 180-degree adaptors
  - housing to housing adaptor
- determine and achieve pin connector centre pin lengths on a device per device basis
- heat shrink hard-line splice or termination using the clean, abrade, flame-brush method
- waterproof jointed cable using heat shrinkage
- apply related work health and safety (WHS) requirements and work practices
- conduct continuity tests
- fit spliced coaxial cable in suitable housing (underground/aerial strand) and attach fitted off devices to:
  - pit or manhole wall, according to manufacturer specifications or carrier work instructions, taking care not to cause damage to co-located cables or joints
  - catenary according to manufacturer specifications or carrier work instructions, ensuring all clearances, separations and segregations from other cables or pole hardware is maintained
- confirm installation complies with industry and manufacturer specifications and warranties while:
  - maintaining all clearances separations and segregations from other cables or pole hardware
  - taking care not to cause damage to co-located cables or joints

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- mark-up as-built plans and document work according to industry requirements.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- RF common and RF design symbols
- RF design and other associated plans
- coaxial cables and connectors, and their application
- equipment and processes to perform a continuity test
- manufacturer requirements for safe operation of equipment and tools relevant to working with coaxial cable
- typical issues and challenges that occur on site including:
  - recycling of old connectors for use with existing devices resulting in incompatibility issues due to incorrect centre pin length leading to intermittent or ongoing faults
- WHS requirements relating to the activity and site conditions, including site security
- relevant legislation, codes and other formal agreements that impact on the work activity
- updating of records to report on completed works.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s where splicing and terminating of coaxial broadband cable can be conducted
- testing equipment currently used in industry
- relevant legislation, work instructions and equipment documentation that impacts on cable splicing, terminating and testing activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL249 Haul underground cable for installation and maintenance work

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to haul underground cable for maintenance, new installations or upgrades in access networks or customer premises.

It applies to technicians who install and recover cables, including multi-pair, coaxial and optical fibre for domestic, commercial or industrial situations.

Licensing, legislative, regulatory and certification requirements apply to telecommunications systems. All customer cabling work in the telecommunications, fire, security and data industries must be performed by a registered cabler. All cablers are required to register with an Australian Communications and Media Authority (ACMA) accredited registrar.

Unit Sector

Telecommunications – Cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Prepare for safe underground cable hauling	1.1 Arrange access to site according to required procedure 1.2 Inform appropriate personnel of identified hazards on worksite 1.3 Confirm hauling location of proposed cable according to appropriate plan specifications obtained from authorised personnel 1.4 Obtain information about proposed locations of other services from relevant authorities 1.5 Set up tools and equipment required for safe work practice according to enterprise guidelines

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ELEMENT	PERFORMANCE CRITERIA
	1.6 Check for dangerous gases and place guards around open manholes according to work health and safety (WHS) and environmental requirements
2 Construct aerial to underground transition	2.1 Install cable protection on pole for transition using approved hardware according to industry standards and asset owner requirements 2.2 Connect conduit to pits or manholes as designed according to industry standards and asset owner requirements
3 Haul cable	3.1 Handle existing cables in a way that avoids cable damage 3.2 Use roping techniques to prove that underground conduit is clear for hauling 3.3 Attach cable to rope for hauling, lubricate cable as required and haul at correct tension, maintaining smooth passage between dispenser and hauler 3.4 Haul cable through conduit to facilitate aerial to underground transition /underground to aerial transition, as required by the design 3.5 Maintain cable and services separations in parallel runs and crossovers to meet manufacturer and regulatory requirements 3.6 Maintain sufficient cable length allowance for jointing and ensure cable is laid up and bent within bending radius tolerance for cable materials in underground enclosure
4 Terminate, seal and test cable	4.1 Seal cables according to enterprise requirements to ensure no sheath damage 4.2 Tag cable for future identification 4.3 Test cable for continuity 4.4 Record and report test results for escalation
5 Complete works on site	5.1 Record any approved alteration to original design using correct symbols and return to appropriate personnel 5.2 Complete and sign reports, as required, according to enterprise policy 5.3 Reinstate site to customer satisfaction and dispose of waste in an environmentally safe manner 5.4 Notify appropriate personnel about job completion and obtain sign-off

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Interprets textual information from relevant sources to identify relevant and key information
Writing	• Uses clear, specific and industry related terminology to complete workplace documentation
Oral Communication	• Uses language and non-verbal features appropriate to context
Numeracy	• Takes readings and measurements and interprets results
Navigate the world of work	• Complies with explicit policies, procedures and legislative requirements relevant to own role
Interact with others	• Identifies and follows accepted communication practices and protocols when liaising with clients, internal and external personnel on technical and operational matters
Get the work done	• Determines job sequence and works logically and systematically to undertake clearly defined tasks • Analyses task requirements to decide on appropriate equipment and practices

Unit Mapping Information

No equivalent unit. Supersedes and is not equivalent to ICTCBL207 Haul underground cable.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL249 Haul underground cable for installation and maintenance work

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- plan the works and prepare the site
- read and interpret drawings and designs to interpret installation requirements
- haul cable applying related work health and safety (WHS) requirements and work practices
- transition cable from aerial to underground or underground to aerial
- use cable dispensing equipment
- use specialised hand or power tools and equipment for hauling cable safely
- test the installation, document and escalate the test result
- prepare all reports and records to industry and enterprise standards.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- legislation, regulations, codes, standards, enterprise requirements and other formal agreements that impact on hauling cable
- specific WHS requirements and environmental procedures relating to the activity and site conditions
- Australian Communications and Media Authority (ACMA) Telecommunications Cabling Provider Rules competency requirements
- features and operating requirements of test equipment
- information required to operate equipment according to a test specification
- manufacturer recommendations for correct hauling of cables

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- safety precautions when working with laser-based systems
- test methods and performance requirements
- typical issues and challenges that occur on site
- cable protection guards
- hardware to secure cables.
-

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s where installation of underground cable can be conducted
- installation equipment currently used in industry
- relevant regulatory and equipment documentation that impacts on cable installation activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards. Refer also to the *Requirements for assessors* in the ICT Information and Communications Technology Training Package Companion Volume Implementation Guide.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL250 Haul and fix aerial cable

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to install aerial cables in customer and access networks. It involves installing, terminating and securing cables. Aerial cable installation may be for a new cable, a cable upgrade, or a cable in need of repair.

It applies to telecommunications lines workers and line installers who use support anchors and catenaries for new installations and upgrades, or to maintain existing networks in domestic, commercial and industrial installations to deliver services in x-digital subscriber line (xDSL), fibre to the X (FTTx) and hybrid fibre coaxial (HFC) networks.

Licensing, legislative, regulatory and certification requirements apply to telecommunications systems and working at heights. All customer cabling work in the telecommunications, fire, security and data industries must be performed by a registered cabler. All cablers are required to register with an Australian Communications and Media Authority (ACMA) accredited registrar. Refer to the ICT Information and Communications Technology Training Package Companion Volume Implementation Guide or the relevant regulator for details of licensing, legislative or certification requirements.

Unit Sector

Telecommunications – Cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for aerial cable installation	1.1 Obtain construction plan from appropriate personnel to scope work and arrange for site access 1.2 Notify appropriate personnel of identified hazards at cabling

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ELEMENT	PERFORMANCE CRITERIA
	worksite 1.3 Determine cable route and type of cable from construction plan, identifying and avoiding other services 1.4 Obtain plant, tools, safety equipment and material to perform tasks safely and efficiently 1.5 Perform pole inspection before climbing and/or making attachment according to industry standards and asset owner requirements
2. Construct aerial to underground transition	2.1 Install cable protection on pole for transition, using approved hardware according to industry standards and asset owner requirements 2.2 Connect conduit to pits or manholes as designed according to telecommunications industry standards and asset owner requirements
3. Install aerial cable	3.1 Use tools according to enterprise guidelines and work health and safety (WHS) regulations 3.2 Install catenary wire, gantry wire or integral bearer cable (IBC) and tension to required specifications 3.3 Position hauling hardware including rollers, hauling guides to ensure no damage is caused and that physical characteristics of cable are maintained 3.4 Haul cable at correct tension according to current Australian Standards and enterprise guidelines, ensuring that no damage is caused and that physical characteristics of cable are maintained 3.5 Secure cable permanently to support structure using aerial fixing devices according to manufacturer specifications and enterprise guidelines
4. Terminate, seal and secure aerial cable	4.1 Terminate, seal and label cables according to manufacturer specifications and enterprise guidelines 4.2 Loop and secure cable on support structure adhering to h bend radius tolerances to reduce damage likelihood or to prevent damage 4.3 Test cable for continuity 4.4 Record and report test results for escalation to other team members or supervisors as required
5. Complete project	5.1 Complete reports about installation and design amendments and file according to enterprise requirements 5.2 Recover obsolete materials and equipment, and return to appropriate point for disposal

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ELEMENT	PERFORMANCE CRITERIA
	5.3 Restore site according to requirements of enterprise or approving authority and to customer satisfaction 5.4 Notify appropriate personnel about job completion and obtain sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Interprets information from technical sources to identify relevant and key information
Writing	• Documents outcomes and changes to designs using industry relevant terminology
Oral Communication	• Uses language and non-verbal features appropriate to context
Numeracy	• Interprets scales and ratios on plans • Performs basic calculations required to take accurate measurements
Navigate the world of work	• Takes personal responsibility for adherence to legal, regulatory and enterprise requirements relevant to own work context
Interact with others	• Identifies and follows accepted communication practices and protocols when liaising with customers and internal and external personnel on technical and operational matters
Get the work done	• Determines job sequence and works logically and systematically to undertake clearly defined tasks • Analyses task requirements to decide on appropriate equipment and practices • Implements actions according to plan, making slight adjustments if necessary, and addressing some unexpected issues • Automatically implements standard procedures for routine decisions in response to familiar problems • Determines and uses appropriate equipment

Unit Mapping Information

No equivalent unit. Supersedes and is not equivalent to ICTCBL214 Fix aerial cable.

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Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL250 Haul and fix aerial cable

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- plan the works and prepare the site
- read and interpret drawings and construction designs to interpret installation requirements
- use cable dispensing equipment
- haul aerial cable using hauling hardware
- transition cable from aerial to underground /underground to aerial
- secure and seal aerial cable
- apply work health and safety (WHS) requirements and work practices relating to hauling and fixing the above cables, including:
  - identifying safe support structures from pole status markings, visual inspection or approved testing procedures
  - completing documentation associated with installing aerial cable pole and ladder safety
- use specialised hand or power tools and equipment for installing aerial cable safely
- test the installation, document and escalate the test result.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- legislation, regulations, codes, standards, enterprise requirements, authorisations and other formal agreements that impact on hauling and fixing aerial cables
- specific WHS requirements and environmental procedures relating to the activity and site conditions

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- typical safety issues and challenges that occur on site
- features and operating requirements of cable test equipment
- information required to operate equipment according to a test specification
- procedures for installing a range of aerial cable types
- manufacturer recommendations for correct hauling of cables
- relevant licence requirements for working at heights
- manufacturer specifications and industry requirements for safe operation of equipment
- test methods and performance requirements
- required authorisations for pole access.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s where aerial cable can be installed
- plant, tools and equipment currently used in industry to erect aerial cable
- relevant regulatory and equipment documentation that impacts on aerial cable installation activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL251 Install aerial and underground cable lead-ins

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to install indoor and outdoor aerial and underground lead-ins for a new metallic or optical cable installation, or upgrade of an existing network or subsystem, or cabling infrastructure for convergence to next generation networks (NGN), digital reception and broadband.

Cable installation may be for a new cable, a cable upgrade or a cable in need of repair. It can be applied to new installations and upgrades of telecommunications cabling projects in domestic, commercial and industrial customer installations.

It applies to technical staff who haul underground or fixed aerial cable lead-in to deliver services in x-digital subscriber line (xDSL), fibre to the home (FTTH) and hybrid fibre coaxial (HFC) networks. This work may require the use of tension meters and hauling equipment.

Licensing, legislative, regulatory and certification requirements apply to telecommunications systems. All customer cabling work in the telecommunications, fire, security and data industries must be performed by a registered cabler. All cablers are required to register with an Australian Communications and Media Authority (ACMA) accredited registrar. Refer to the ICT Information and Communications Technology Training Package Companion Volume Implementation Guide or the relevant regulator for details of licensing, legislative or certification requirements.

Unit Sector

Telecommunications – Cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for cable	1.1 Obtain construction plan from appropriate personnel to scope

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ELEMENT	PERFORMANCE CRITERIA
installation	work and arrange for site access 1.2 Access site according to enterprise procedure 1.3 Inform appropriate personnel of identified hazards and safety constraints on worksite 1.4 Obtain cable installation plan and set up installation equipment according to manufacturer requirements 1.5 Identify existing 'other' services by analysing drawings and following Dial Before You Dig (DBYD) protocols 1.6 Determine cable route and type of cable from construction plan, identifying and avoiding other services 1.7 Select suitable protective clothing, tools and equipment, and safety equipment, and confirm support structures are safe
2 Install aerial cable lead-in	2.1 Use safe support structures and appropriate tools 2.2 Select required type of cable bearer and determine need for separate catenary wire or self-supporting installation 2.3 Install and secure catenary wire, integral bearer cable (IBC) or self-supporting cable permanently to support structure using aerial fixing devices, and adjust tension to meet relevant height and minimum sag requirements to required specifications 2.4 Secure cable safely, leaving cable loop on support structure 2.5 Install mid-span fly offs according to cable configuration, using approved hardware 2.6 Install cable ensuring no damage is caused 2.7 Maintain physical characteristics of cable leaving cable loop on support structure according to cable configuration 2.8 Terminate and test cable continuity in customer enclosure and aerial enclosure 2.9 Label cables according to industry guidelines and authorisations
3 Install underground cable lead-in	3.1 Ensure pipe or conduit is not blocked and is clear of debris 3.2 Run push rod through pipe and attach cable for hauling 3.3 Haul cable using lubricant, cable slippers or rollers to ensure no sheath damage when hauling at correct tension into and out of enclosures 3.4 Provide sufficient cable allowance in enclosures for jointing and maintenance requirements 3.5 Terminate cable in customer enclosure and pit enclosure

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ELEMENT	PERFORMANCE CRITERIA
4 Seal and secure cable	4.1 Seal cable ends to prevent entrance of foreign material according to manufacturer specifications and industry standards 4.2 Secure cable loop on support structure to minimise damage to conductors 4.3 Weatherproof building entry points as required 4.4 Fit over voltage protection devices to all cables with metallic component as required
5 Complete tasks on site	5.1 Record any approved alteration to original design and return to appropriate personnel 5.2 Complete appropriate records and sign reports as required according to industry policy 5.3 Restore site to original condition and dispose of waste in environmentally safe manner 5.4 Notify appropriate personnel and obtain sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Uses a range of strategies to facilitate comprehension
Writing	• Completes records according to enterprise requirements
Oral Communication	• Use language and non-verbal features appropriate to context
Numeracy	• Interprets and comprehends a range of everyday mathematical information that is embedded in familiar and routine texts
Navigate the world of work	• Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work context, and draws attention to any issues that may affect self or others
Get the work done	• Implements actions as per plan, making slight adjustments if necessary, and addressing some unexpected issues • Automatically implements standard procedures for routine decisions in response to familiar problems

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Unit Mapping Information

No equivalent unit. Supersedes and is not equivalent to ICTCBL220 Install a cable lead-in.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL251 Install aerial and underground cable lead-ins

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- plan the works and prepare the site
- install at least two types of aerial cable and one type of underground cable, including placing and securing cables on support structures and building faces for both internal and external locations
- install at least one mid-span fly offs utilising industry specific/approved hardware
- haul, secure and terminate, continuity test and seal cables
- perform visual inspection to identify safe support structures from pole status markings
- use specialised hand or power tools and equipment for safely installing aerial and underground cable
- terminate cables at the customer and network ends of aerial and underground installations
- complete and provide a report, documenting the installation for the customer
- comply with all related work health and safety (WHS) requirements, industry standards, authorisations and work practices.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- legislation, codes, enterprise procedures and other formal agreements that impact on the work activity
- codes, standards, industry guidelines and authorisations for cable installation and cabling
- specific WHS requirements and environmental procedures relating to the activity and site conditions

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- relevant regulatory requirements for working at heights and working underground
- common types of cable used in telecommunications
- manufacturer requirements for selection and safe operation of tools and equipment
- safety equipment, both personal and worksite related, required for safe work practices
- required fixing devices and hardware used in cable lead-in work
- termination methods and performance requirements that include cable continuity of installed cables
- typical safety issues and challenges that occur on site, including issues relating to the safe use of support structures
- purpose of records and documentation required for work activity.
-

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s where aerial and underground cable lead-ins can be conducted
- plant, tools, equipment and personal protective equipment currently used in industry
- special purpose tools, equipment and materials currently used in industry such as continuity testing equipment
- relevant regulatory and equipment documentation that impacts on work activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL252 Joint and terminate coaxial cable

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to install, joint and terminate coaxial cable in the customer access network (CAN) environment for emerging technologies using high speed broadband and the delivery of cable television services on customer premises for domestic, commercial or industrial installations.

It applies to technical staff who joint and terminate coaxial cable used in all telecommunications applications, including convergence technologies of telephony, data, video and multimedia as part of next generation networks (NGNs).

Licensing, legislative, regulatory and certification requirements apply to telecommunications systems. All customer cabling work in the telecommunications, fire, security and data industries must be performed by a registered cabler. All cablers are required to register with an Australian Communications and Media Authority (ACMA) accredited registrar. Refer to the ICT Information and Communications Technology Training Package Companion Volume Implementation Guide or the relevant regulator for details of licensing, legislative or certification requirements.

Unit Sector

Telecommunications – Cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to install and joint coaxial cable	1.1 Confirm approval for site access with customer prior to site entry 1.2 Read and interpret customer installation specifications and physical conditions at site to determine layout of job 1.3 Locate and identify adjoining other services according to

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ELEMENT	PERFORMANCE CRITERIA
	enterprise guidelines and work health and safety (WHS) practices 1.4 Test for and respond to presence of dangerous gases in underground enclosures according to enterprise guidelines 1.5 Undertake approved alterations to design according to enterprise guidelines
2. Verify placement and secure coaxial cable	2.1 Use safety equipment to protect self and public 2.2 Maintain coaxial cable segregation to industry standard requirements 2.3 Protect integrity of coaxial shield cable to ensure no loss of performance 2.4 Place cable in position with sufficient slack to allow termination and maintain minimum bend radius according to manufacturer specifications 2.5 Follow installation designs to install cable safely without damage to cable or customer premises 2.6 Maintain radio frequency (RF) signal strength by installing cable lengths within manufacturer or design specifications 2.7 Locate securing hardware to reduce cumulative effect on cable wave shape properties and attach cable ties to minimise cable damage
3. Joint coaxial cable	3.1 Strip coaxial cable, according to specifications, to required length using appropriate tools 3.2 Select appropriate kit to match type of coaxial cable in use and jointing method according to manufacturer recommendations 3.3 Joint cable and ensure jointing fitting retains segregation of conductor and shield 3.4 Seal all joints according to manufacturer specifications
4. Terminate coaxial cable	4.1 Prepare coaxial cable for termination according to specifications using appropriate tool 4.2 Select connectors to match type of coaxial cable in use and use terminating method recommended by manufacturer 4.3 Verify connector fitting retains segregation of conductor and shield 4.4 Terminate connectors to torque as recommended by manufacturer to prevent RF leakage 4.5 Test connectors to mating specifications using gauge tester 4.6 Maintain continuous ground on terminations and waterproof seal

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ELEMENT	PERFORMANCE CRITERIA
	to preserve cable integrity
5. Complete installation operation	5.1 Place cables in enclosure and lay up according to manufacturer instructions and enterprise guidelines, and check that no safety hazards are evident 5.2 Place other services including cables according to enterprise guidelines 5.3 Reinstate site, remove waste and debris for disposal, and maintain safe worksite conditions
6. Complete installation administration	6.1 Complete reports according to enterprise policy 6.2 Note alterations to plans using appropriate symbols

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Reads familiar texts fluently, automatically recognising most everyday words and some specialised vocabulary
Writing	• Sequences writing to produce cohesive text and uses layout consistent with text type
Oral Communication	• Demonstrates awareness of choices for register, especially in situations that are familiar
Numeracy	• Interprets and comprehends whole numbers and familiar or routine fractions, decimals and percentages • Selects and uses appropriate tools, hand-held devices, computers and technological processes
Navigate the world of work	• Takes responsibility for decisions regarding when and how to complete tasks, and coordinate with or delegate to others • Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work context, and draws attention to any issues that may affect self or others
Get the work done	• Implements actions as per plan, makes slight adjustments if necessary, and addresses unexpected issues • Automatically implements standard procedures for routine decisions

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Unit Mapping Information

ICTCBL252 Joint and terminate coaxial cable supersedes and is equivalent to ICTCBL209 Joint and terminate coaxial cable.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL252 Joint and terminate coaxial cable

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- determine installation requirements, and check and prepare the site ready for coaxial cable installation
- perform an in-line splice
- perform jointing and termination of coaxial cable using specialised hand or power tools and equipment
- complete waterproof jointed cable using heat shrinkage
- apply related work health and safety (WHS) requirements and work practices
- conduct signal strength tests and interpret results
- fit jointed coaxial cable in suitable housing
- check and adjust cable segregations
- verify the installation complies with enterprise and manufacturer specifications and warranties
- document work according to enterprise requirements.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- relevant legislation, regulations, codes, standards, enterprise guidelines, formal agreements and contracts that impact on the work activity
- specific WHS requirements and environmental procedures relating to the activity and site conditions, including site security and typical safety issues and challenges that occur on site

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- range of coaxial cables and connectors and their application
- information required to operate equipment according to a test specification
- features and operating requirements of test equipment
- manufacturer requirements for selection, installation and safe operation of equipment
- test methods and performance requirements
- impact that other services may have on installation work
- operation of tools relevant to working with coaxial cable
- environmental requirements for waste and debris disposal.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s where jointing coaxial broadband cable can be conducted
- special purpose tools, equipment and materials currently used in industry such as joint testing equipment
- relevant regulatory and equipment documentation that impacts on cable jointing and testing activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL253 Construct underground telecommunications infrastructure

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to construct underground telecommunications infrastructure, made up of conduits and enclosures, for cabling provisioning.

It applies to individuals in technical roles in civil construction who install pits and pre-built enclosures with connecting pipes for underground telecommunications infrastructure, predominantly in greenfield sites.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to construct underground work	1.1 Obtain construction design plan from appropriate personnel to scope work and arrange for site access 1.2 Notify appropriate personnel of identified safety hazards and other services that will need to be considered 1.3 Obtain plant, tools and safety equipment to perform tasks safely and efficiently 1.4 Determine type of underground pit/manhole required for project as specified in construction design plan

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ELEMENT	PERFORMANCE CRITERIA
2. Install enclosure	2.1 Use tools according to enterprise guidelines and work health and safety (WHS) regulations 2.2 Determine excavation meets specification of design plan 2.3 Place foundation of suitable material to provide safe and stable footing prior to installing underground enclosure in excavation 2.4 Place recognised barrier over construction where enclosure is to be installed over power cables according to enterprise requirements or agreements with other authorities 2.5 Install earth mat facility under enclosure as required by enterprise 2.6 Install enclosure specified in construction design plan according to manufacturer specifications using specified materials
3. Install connecting pipe works	3.1 Install conduit in trench to enterprise specifications 3.2 Connect conduit to enclosure according to manufacturer specifications and industry practice
4. Complete project	4.1 Complete reports and record alterations to plans using appropriate symbols, according to enterprise policy 4.2 Complete all labelling requirements according to industry standard 4.3 Recover obsolete materials and equipment, and return to appropriate point for disposal 4.4 Restore site according to enterprise or approving authority requirements and to customer satisfaction 4.5 Notify appropriate personnel of job completion and obtain sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Interprets information from technical sources to identify relevant and key information
Writing	• Documents outcomes and changes to plans using industry relevant terminology and recognised plan symbols
Numeracy	• Interprets scales and ratios on plans • Performs basic calculations appropriate to measuring and estimating size

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Skill	Description
Navigate the world of work	• Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work context, and draws attention to any issues that may affect self or others
Interact with others	• Identifies and follows accepted communication practices and protocols when liaising with clients, internal and external personnel on technical and operational matters
Get the work done	• Determines job sequence and works logically and systematically to undertake clearly defined tasks • Analyses task requirements to decide on appropriate equipment and practices • Implements actions as per plan, making slight adjustments if necessary, and addressing some unexpected issues • Automatically implements standard procedures for routine decisions in response to familiar problems

Unit Mapping Information

ICTCBL253 Construct underground telecommunications infrastructure supersedes and is equivalent to ICTCBL213 Construct underground telecommunications infrastructure.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL253 Construct underground telecommunications infrastructure

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- interpret and apply design plans and prepare for construction
- install enclosures including pipe, pit and prefabricated manholes
- construct in two different soil types: sand, rock, soil or combination soil types
- shore an excavation site to meet enterprise and regulatory requirements
- use specialised hand or power tools and equipment normally used for excavation, pipe, conduit installation and site restoration safely
- complete and document specified work
- apply related work health and safety (WHS) requirements and work practices associated with excavation, enclosure installation and site restoration.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- legislation, codes, enterprise guidelines and other formal agreements that impact on the work activity, including excavation
- specific WHS requirements and environmental guidelines relating to the activity and site conditions, including typical safety issues and challenges that occur on site
- civil construction elements including:
  - operation of construction plant, tools and equipment
  - methods of enclosure construction
  - methods for laying foundations
  - construction design plans

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- manufacturer requirements for safe operation of equipment
- relevant licence requirements for equipment used in constructing underground infrastructure.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s where enclosure construction can be conducted
- construction equipment currently used in industry
- relevant regulatory and equipment documentation that impacts on construction.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL254 Joint metallic conductor cable in access network

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to joint metallic, conductor cable on the service provider side of the network boundary in communications applications, including digital and analog, telephony, data, video, digital broadcasting, computer networks, local area networks (LANs), wide area networks (WANs) and multimedia.

It applies to individuals working in technical roles who joint metallic conductor cable for indoor and outdoor installations on new installations and cable upgrades, and maintain infrastructure in domestic, commercial and industrial situations for service providers and asset owners.

Licensing, legislative, regulatory and certification requirements apply to telecommunications systems. All customer cabling work in the telecommunications, fire, security and data industries must be performed by a registered cabler. All cablers are required to register with an Australian Communications and Media (ACMA) accredited registrar.

Unit Sector

Telecommunications – Cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for jointing metallic conductor cable for access network	1.1 Prepare for given work according to relevant legislation, regulations, codes, and standards 1.2 Arrange access to site according to required procedure 1.3 Inform appropriate personnel of existing and potential worksite hazards

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Review site plans and documentation 1.5 Select cable type and appropriate connectors for cable joint 1.6 Set up tools, equipment and materials required for safe work practice 1.7 Obtain information about location of other services from relevant authorities
2. Joint metallic conductor cable for access network	2.1 Joint metallic cable following work health and safety (WHS) and environmental requirements 2.2 Ensure joint is sealed to industry specifications 2.3 Perform relevant cable tests to ensure joint complies with site specifications, manufacturer specifications, and relevant legislation, regulations, codes and standards 2.4 Rectify cable faults 2.5 Record cable tests and required modifications 2.6 Label and tag cable joint according to enterprise guidelines and industry practice
3. Protect and alarm cable	3.1 Pressurise cable and check for leakage 3.2 Reconnect alarms, as required, according to enterprise guidelines 3.3 Remove waste and debris from worksite and dispose of according to environmental requirements, to maintain safe worksite conditions
4. Complete records and clean-up site	4.1 Complete required records including alterations and notify customer 4.2 Clean-up and reinstate site according to customer and company requirements 4.3 Present all records to appropriate personnel and obtain sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Interprets information from technical sources to identify relevant and key information

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Skill	Description
Writing	• Documents outcomes and changes to records using industry relevant terminology
Numeracy	• Takes measurements and interprets results
Navigate the world of work	• Takes personal responsibility for adherence to legal, regulatory and enterprise requirements relevant to own work context
Interact with others	• Identifies and follows accepted communication practices and protocols when liaising with clients and internal and external personnel on technical and operational matters
Get the work done	• Determines job sequence and works logically and systematically to undertake clearly defined tasks • Analyses task requirements to decide on appropriate equipment and practices • Implements actions as per plan, making slight adjustments if necessary, and addressing some unexpected issues • Automatically implements standard procedures for routine decisions in response to familiar problems

Unit Mapping Information

ICTCBL254 Joint metallic conductor cable in access network supersedes and is equivalent to ICTCBL215 Joint metallic conductor cable in access network.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL254 Joint metallic conductor cable in access network

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- joint cable with appropriate connectors and according to specifications
- apply work health and safety (WHS) requirements and work practices associated with the jointing of metallic cable, including documentation.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- legislation, codes, enterprise guidelines and other formal agreements that impact on the work activity, in particular:
  - Australian Communications and Media Authority (ACMA) competency requirements for Telecommunications Cabling Provider Rules
- features and operating requirements of test equipment
- information required to operate equipment according to a test specification
- manufacturer requirements for safe operation of equipment
- safety precautions when working with cables
- specific WHS and environmental requirements relating to the activity and site conditions
- test methods and performance requirements
- typical issues and challenges that occur on site.

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Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s where jointing metallic conductor cable can be performed
- cable testing equipment currently used in industry
- relevant regulatory and equipment documentation that impacts on cable jointing activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards. Refer also to the *Requirements for assessors* in the ICT Information and Communications Technology Training Package Companion Volume Implementation Guide.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL313 Modify and cutover cable

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to modify an infrastructure to cutover new cables into an existing indoor and outdoor, domestic, commercial or industrial cabling installation including communications applications in telephony, broadband, data, video, radio frequency (RF) equipment, security and computer networks, including local area networks (LAN), wide area networks (WAN) and multimedia.

It applies to field officers, technicians or lineman installers from carriers, contractors or other service providers who upgrade coaxial or optical fibre cables as part of a hybrid fibre coaxial (HFC) network, a broadband access network or a large client private network.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the Implementation Guide Companion Volume or the relevant regulator for specific guidance on requirements.

Unit Sector

Telecommunications – cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*

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ELEMENT	PERFORMANCE CRITERIA
1. Prepare for cable modification and cutover	1.1 Obtain relevant legislation, codes, regulations and standards for given work 1.2 Scope work by obtaining project plan from appropriate personnel and arrange for site access to comply with security arrangements 1.3 Notify appropriate personnel of identified safety hazards at worksite 1.4 Determine cable route and type of cable from project plan, and identify and avoid other services 1.5 Obtain plant, tools and safety equipment and material to perform tasks safely and efficiently 1.6 Prepare implementation plan with cutover tasks based on identified nature of job and seek client approval 1.7 Notify client and network carrier of proposed cutover details and proposed disruption to services 1.8 Undertake additional preparatory non-jointing work, as required, according to enterprise guidelines and site conditions 1.9 Select labour support required according to cutover tasks and available skills 1.10 Select technical equipment for cutover to suit materials being used, cable type and joint enclosure
2. Joint and cutover cable	2.1 Follow work health and safety (WHS) and environmental requirements for given work 2.2 Joint cable according to sequencing plan, materials, joint type, location, and enterprise and manufacturer's guidelines 2.3 Test cable for performance and rectify any faults relating to cutover according to location, materials available and industry practice 2.4 Seal all joints according to cable type, location, and enterprise and manufacturer's guidelines
3. Complete project documentation	3.1 Record test results for future reference, complete reports on cutover installation and design amendments to reflect existing cable layout according to enterprise requirements 3.2 Recover obsolete materials and return to appropriate point for disposal 3.3 Restore site according to requirements of enterprise or approving authority and to client satisfaction 3.4 Notify appropriate personnel completion of cutover and obtain

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ELEMENT	PERFORMANCE CRITERIA
	sign off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	• Analyses and consolidates test results and data from a range of sources, against defined criteria and requirements • Reads and interprets plans, specifications and other documentation from a variety of sources and consolidates information to determine requirements
Writing	• Documents outcomes and changes to plans using industry relevant terminology and recognised plan symbols • Prepares documentation and correspondence using clear language and correct spelling and terminology
Oral Communication	• Interacts effectively in verbal exchanges using active listening, questioning and reading of verbal and non-verbal signals to convey and clarify information
Numeracy	• Make calculations appropriate for measuring and estimating materials for construction • Performs mathematical calculations to check, interpret and confirm results of system tests
Navigate the world of work	• Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements • Identifies and acts on issues that contravene relevant policies, procedures and legal requirements
Interact with others	• Uses a range of strategies to establish a sense of connection and build rapport with clients and co-workers
Get the work done	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes • Addresses less predictable problems and initiates standard procedures in response, applying problem solving processes in determining a solution

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTCBL313 Modify and cutover cable (Release 2)	ICTCBL313 Modify and cutover cable (Release 1)	Updates to knowledge evidence. Updates to template to apply consistent format between units.	Equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL313 Modify and cutover cable

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- prepare for cutover
- rearrange cable
- conduct tests to determine success of cutover
- interpret results and rectify faults occurring as a result of cutover
- apply regulations and standards related to the cable rearrangement
- comply with all related health and safety requirements, work practices and service level agreements.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- cabling types, connectors and cabling structures
- legislation, codes of practice and other formal agreements that impact on the work activity
- manufacturer’s requirements for safe operation of equipment
- cutover of cable on the client's equipment
- health and safety requirements relating to the activity and site conditions

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- test methods and performance requirements
- features and operating requirements of test equipment
- typical issues and challenges that occur on the worksite
- purpose of warranties and service level agreements (SLA).

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- systems and equipment involving cutover
- installation equipment currently used in industry
- relevant regulatory and equipment documentation that impacts on work activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL322 Install, test and terminate optical fibre cable on customer premises

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 6.0. Release 2 created for editorial corrections.
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to install, test and terminate optical fibre cable on customer premises for communications applications using a range of terminations that may include direct termination, fusion splicing and mechanical splicing.

It applies to technical staff who place, secure and terminate optical fibre cable in new installations and upgrades or maintain existing networks in domestic, commercial and industrial installations. Communications applications include digital and analog, telephony, data, video, digital broadcasting, computer networks, local area networks (LANs), wide area networks (WANs) and multimedia.

Licensing, legislative, regulatory and certification requirements apply to telecommunications systems. All customer cabling work in the telecommunications, fire, security and data industries must be performed by a registered cabler. All cablers are required to register with an Australian Communications and Media Authority (ACMA) accredited registrar.

Unit Sector

Telecommunications – Cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*

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ELEMENT	PERFORMANCE CRITERIA
1. Prepare for installation of optical fibre cable	1.1 Access site according to enterprise procedures 1.2 Inform appropriate personnel of identified worksite hazards 1.3 Organise tools, cabling products, equipment and materials for given work 1.4 Match optical fibre cable type and connectors to installation environment and customer requirements 1.5 Check proposed route and bend ratios according to manufacturer specifications and industry standards 1.6 Test fibres in the cable on the drum for optical continuity as required 1.7 Use personal protective equipment, including safety glasses, when working with bare fibre stripping/cleaving and utilise sharps disposal containers for bare fibre off cuts 1.8 Place fibre patch leads in support pathway, avoiding pressure, crushing and bending
2 Clean and inspect connectors	2.1 Test patch leads, before use, for continuity with a visible light source and inspect and clean connector end faces 2.2 Test fibre connectors ensuring the circuit has no infra-red transmission (dark fibre) 2.3 Ensure that associated equipment is labelled to inform others not to switch the equipment on or reconnect patch leads 2.4 Remove connector dust cover and inspect for dust and damage using an optical microscope or video microscope 2.5 Clean connectors with recommended cleaning tools, using wet and dry methods as required and re-inspect 2.6 Replace connectors or patch cords when inspection reveals irreparable damage or contamination cannot be cleaned off 2.7 Place fibre patch leads in support pathway avoiding pressure, crushing and bending
3. Install indoor/outdoor cables and pigtails to an indoor enclosure	3.1 Undertake work in a controlled environment 3.2 Strip loose tube fibre cable and fit cable and fibres to an indoor enclosure 3.3 Prepare pigtails on workstation in an orderly manner matching cable fibre colour codes to pigtail colour codes as required
4. Terminate or fusion-splice cable	4.1 Prepare fibre for splicing, cleaning and cleaving 4.2 Splice prepared fibres

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ELEMENT	PERFORMANCE CRITERIA
	4.3 Shrink splice protective sleeve to spliced fibres and allow to cool
5.Terminate fibre using direct connectorisation	5.1 Prepare fibre (250 um and/or 900 um fibres) for mechanical splicing, cleaning and cleaving 5.2 Connect mechanical splice connector
6.Test circuit joints	6.1 Use visible light sources safely to determine continuity of patch cords and fusion/mechanical splices 6.2 Test each fibre circuit joint for transmission loss with a light source and power meter, and re-terminate joint or connector when transmission loss exceeds industry standards and manufacturer specifications 6.3 Record all measurements in dBm for customer handover
7. Remove fibre hazards from work area	7.1 Clean work area thoroughly to minimise risk of injury from glass fibre off-cuts 7.2 Dispose of waste safely according to relevant environmental requirements 7.3 Restore worksite to customer satisfaction
8. Document installation	8.1 Update plans and records with details of installation and test results 8.2 Notify customer of work completion and obtain sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Recognises the structures and distinguishing features of a range of familiar text types
Writing	• Chooses appropriate text type to communicate relevant information and/or ideas effectively
Oral Communication	• Demonstrates awareness of choices in register, especially in situations that are familiar
Numeracy	• Interprets and comprehends whole numbers and familiar or routine fractions, decimals and percentages
Navigate the world of	• Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work context, and draws attention to

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Skill	Description
work	any issues that may affect self or others
Get the work done	• Implements actions as per plan, making slight adjustments if necessary, and addressing some unexpected issues • Automatically implements standard procedures for routine decisions in response to familiar problems • Understands when to take responsibility and when to notify others

Unit Mapping Information

No equivalent unit. Supersedes and is not equivalent to ICTCBL302 Install and terminate optical fibre cable on customer premises.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL322 Install, test and terminate optical fibre cable on customer premises

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 6.0. Release 2 created for editorial corrections.
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- install, terminate and test optical fibre cable, applying safety precautions when working with laser-based systems
- prepare workstation to provide for fibre preparation, cleaving, fusion splicing, enclosure fit out, cleaning pads and tools, sharps and waste disposal
- ensure workstation is located in a dust free environment with adequate ventilation, lighting and power
- install and test single mode and multimode cable
- perform direct field termination
- provide customer report documenting installation and test results
- comply with all related work health and safety (WHS) and environmental requirements and work practices
- install a mechanical splice connector and fusion splice a pigtail to cable fibre
- complete relevant documentation to manufacturer and design requirements.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

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- legislation, codes and standards for optical fibre
- specific WHS requirements and enterprise procedures relating to the activity and site conditions
- various types of optical fibre cable and associated connectors, enclosures and required equipment
- features and operating requirements of optical fibre cable test equipment
- information required to operate equipment according to a test specification
- manufacturer requirements for safe operation of optical fibre equipment
- safety precautions when working with laser-based systems
- hazards associated with working with optical cable including:
  - bare fibres
  - hazardous laser light
- test methods and performance requirements
- issues relating to environmental work practices and the disposal of waste
- techniques for types of termination, including:
  - direct termination
  - fusion splicing.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s where installation and termination of optical fibre cable can be conducted
- special purpose tools, equipment and materials currently used in industry such as optical fibre testing equipment
- relevant regulatory and equipment documentation that impacts on optical fibre cable installation activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards. Refer also to the *Requirements for assessors* in the ICT Information and Communications Technology Training Package Companion Volume Implementation Guide.

Note: All customer cabling work in the telecommunications, fire, security and data industries must be performed by a registered cabler. All cablers are required to register with an Australian Communications and Media (ACMA) accredited registrar.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL323 Test cables and systems on customer premises

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Release 5.0.

Application

This unit describes the skills and knowledge required to test the performance of copper, optical fibre and telecommunications cable on customer premises for the purpose of commissioning, fault identification or routine maintenance. It includes ensuring a safe and secure work environment while work is being undertaken.

It applies to field officers, technicians or technical supervisors working for cablers, technicians, contractors or other service providers who carry out domestic, commercial or industrial installations in indoor and outdoor environments. Communications applications include digital and analog, telephony, data, video, digital broadcasting, computer networks, local area networks (LANs), wide area networks (WANs), power over ethernet (PoE) cable installations and multimedia.

Licensing, legislative, regulatory and certification requirements apply to telecommunications systems. All customer cabling work in the telecommunications, fire, security and data industries must be performed by a registered cabler. All cablers are required to register with an Australian Communications and Media Authority (ACMA) accredited registrar.

Pre-requisite Unit

ICTCBL247 Install, maintain and modify customer premises communications cabling: ACMA Open Rule

ICTTEN208 Use electrical skills when working with telecommunications networks

ICTWHS204 Follow work health and safety and environmental policy and procedures

Unit Sector

Telecommunications – Cabling

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for cable and system test	1.1 Establish purpose of test to be conducted on cables and systems based on customer complaints of faulty or poor system performance operations 1.2 Confirm ACMA (Australian Communications and Media Authority) requirements and methods for compliance with relevant legislation, regulations, codes and standards 1.3 Select required tests according to site conditions, customer complaint documentation and manufacturer specifications 1.4 Arrange access to site and confirm service is available for testing 1.5 Select test equipment, tools and materials according to required industry testing standards
2. Perform tests	2.1 Use tools and test equipment according to manufacturer specifications and undertake tests required after initial analysis of customer complaints 2.2 Perform work safely to remove risk of injury to operator, other users and equipment 2.3 Perform checks and adjustments to ensure operating environmental factors will not prejudice test results 2.4 Perform optical time domain reflectometer testing to determine fibre and event characteristics according to meet customer or enterprise specifications and manufacturer warranties 2.5 Perform structured cabling certification testing to determine cable system characteristics according to customer or enterprise specifications and manufacturers warranties 2.6 Evaluate PoE circuits, cable lengths, copper conductor sizes, resistance versus power losses, environmental temperatures and likely power levels to ensure circuit current, voltage and power to the receiving device
3. Interpret test results and determine action	3.1 Read test results accurately and compare with manufacturer and site specifications for cable performance 3.2 Evaluate test results, taking into account measurement error margins against a known reference as required 3.3 Assess test results fairly and accurately using verifiable data 3.4 Rectify faults or escalate to appropriate person

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ELEMENT	PERFORMANCE CRITERIA
4. Complete records and clean up site	4.1 Document test results and ensure test results remain current 4.2 Verify test results and provide to customer as required 4.3 Update site and installation files to ensure information on system performance is traceable including PoE standards 4.4 Reinstate site according to customer and company requirements 4.5 Notify customer and obtain sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Reads, analyses and interprets plans, specifications and other documentation relevant to cable and systems testing
Writing	• Prepares written technical reports and documentation for test results • Records notes on communications and provides written feedback to customers
Oral Communication	• Discuss parameters for the tests and provide oral feedback on results as required, using language appropriate to the understanding of the customer
Numeracy	• Carries out calculations and analyses results as appropriate for the tests being performed
Navigate the world of work	• Takes personal responsibility for implementing implicit policies, procedures and legislative requirements, particularly as they apply to safety
Interact with others	• Selects and uses appropriate conventions and protocols when communicating with customers and co-workers
Get the work done	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes

Unit Mapping Information

No equivalent unit. Supersedes and is not equivalent to ICTCBL304 Perform cable and system test on customer premises.

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Links

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Assessment Requirements for ICTCBL323 Test cables and systems on customer premises

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Release 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- perform certification tests on copper ethernet cables to cover common ethernet cable faults including:
  - crosstalk, attenuation to crosstalk ratio (ACR), delays, wiremaps, attenuation, length
- perform optical time domain reflectometer (OTDR) tests on fibre cables to cover common fibre cable faults and common waveforms for standard fibre cabling events, including:
  - breaks, distance, connectors, Numerical Aperture mismatches, end of fibre, ghosts, splitters
- check capabilities of ethernet cables for power over ethernet (PoE)
- provide power calculations and evaluation of viability and safety of cables providing PoE
- interpret test results
- use appropriate methods to escalate cable faults affecting service delivery
- report on completed cable and system test.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- legislation, codes, enterprise requirements, and other formal agreements that impact on the work activity
- specific WHS requirements and environmental factors relating to the activity and site conditions
- cabling types, connectors and cabling structures
- single-mode (SM) and/or multi-mode (MM) optical fibre links in point-to-point networks

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- connections to carrier infrastructure or equipment, such as main distribution frame (MDF) or customer interface units (CIU) or network termination device (NTD)
- electrical and/or optical properties to be measured
- PoE potential hazards and performance specifications
- remote power feed method and system
- test results derived from test equipment and interpretation of test results against expected cable system performance specifications
- typical performance parameters and faults that may be encountered in customer cabling and related connection and transmission equipment
- types of equipment and manufacturer specifications suitable for tests to be carried out.
-

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s where cable and system tests can be conducted
- cable and system testing equipment currently used in industry
- relevant regulatory and cable specifications that impact on cable and system testing installation activities, including PoE on new and legacy cabling.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards. Refer also to the *Requirements for assessors* in the ICT Information and Communications Technology Training Package Companion Volume Implementation Guide.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL324 Cut over new systems and equipment on customer premises

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to cut over new or upgraded systems and equipment on customer premises. This may include indoor or outdoor installations of communications applications in telephony, broadband, data, video, radio frequency (RF) equipment, security and computer networks, including local area networks (LANs), wide area networks (WANs) and multimedia systems.

It applies to telecommunications trade workers carrying out new installations or upgrades to domestic, commercial or industrial systems and equipment at customer premises.

Licensing, legislative, regulatory and certification requirements apply to telecommunications systems. Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. All customer cabling work in the telecommunications, fire, security and data industries must be performed by a registered cabler. All cablers are required to register with an Australian Communications and Media Authority (ACMA) accredited registrar. Refer to the ICT Information and Communications Technology Training Package Companion Volume Implementation Guide or the relevant regulator for specific guidance on requirements.

Unit Sector

Telecommunications – Cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare system and equipment cut over	1.1 Scope work by obtaining project plan from appropriate personnel and arrange for site access according to security arrangements

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ELEMENT	PERFORMANCE CRITERIA
	1.2 Notify appropriate personnel of identified worksite hazards 1.3 Determine cable route, and type of cable and equipment required from project plan, and identify and avoid other services 1.4 Obtain plant, tools, safety equipment and materials to perform tasks safely and efficiently 1.5 Prepare implementation plan with cut over tasks based on identified nature of job, and seek customer approval 1.6 Notify customer and network carrier of proposed cut over details and arrange for customer representation and agreement
2. Cut over system or equipment into service	2.1 Perform cut over tasks and connect network facilities according to approved plan 2.2 Test all cable connections, equipment and facilities according to technical manuals and specifications 2.3 Evaluate test results to ensure proper system operation and performance, and rectify as required
3. Complete project documentation	3.1 Record test results for future reference, complete reports on cut over installation and design amendments according to enterprise requirements 3.2 Recover obsolete materials and equipment, and return to customer or appropriate point for disposal 3.3 Restore site according to enterprise or approving authority requirements and customer satisfaction 3.4 Notify appropriate personnel of job completion and obtain sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Reads and interprets plans, specifications and other documentation from a variety of sources and consolidates information to determine requirements • Analyses and consolidates test results and data from a range of sources, against defined criteria and requirements
Writing	• Prepares documentation and correspondence using clear language and correct spelling and terminology

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Skill	Description
	• Documents outcomes of tests and changes to plans using industry relevant terminology and recognised plan symbols
Oral Communication	• Interacts effectively in verbal exchanges using active listening, questioning and reading of verbal and non-verbal signals to convey and clarify information • Interacts effectively in verbal exchanges, using active listening and questioning to convey and clarify information
Numeracy	• Makes calculations appropriate for measuring and estimating materials for construction • Performs mathematical calculations to check, interpret and confirm results of system tests
Navigate the world of work	• Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements • Identifies and acts on issues that contravene relevant policies, procedures and legal requirements
Interact with others	• Selects and uses appropriate conventions and protocols when communicating with customers and co-workers in a range of work contexts • Uses a range of strategies to establish a sense of connection and build rapport with customers and co-workers
Get the work done	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes • Makes decisions and implements standard procedures for routine tasks, using formal decision-making processes for more complex and non-routine situations • Applies problem solving processes for determining solutions

Unit Mapping Information

ICTCBL324 Cut over new systems and equipment on customer premises supersedes and is equivalent to ICTCBL312 Cutover new systems and equipment on customer premises.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL324 Cut over new systems and equipment on customer premises

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- read and interpret project plans and specifications
- develop and implement a cut over work plan
- install customer premises equipment and cabling
- configure and test cabling systems and equipment
- apply relevant regulations and standards.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- legislation, regulations, codes, standards and other formal agreements that impact on the work activity
- health, safety and environmental requirements relating to the activity and site conditions
- cabling types, connectors and cabling structures
- manufacturer requirements for safe operation of equipment
- equipment requiring cut over at customer premises
- selection of test methods and performance requirements
- features and operating requirements of test equipment for cut over.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

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- site/s where installation of systems and equipment can be conducted
- plant, tools and equipment currently used in industry
- relevant regulatory and equipment documentation that impacts on work activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL325 Maintain cable network

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to maintain indoor or outdoor, domestic, commercial or industrial cable network on customer premises or service provider access networks. This may include communications applications in telephony, broadband, data, video, radio frequency (RF) equipment, security and computer networks, including local area networks (LANs), wide area networks (WANs) and multimedia.

It applies to technicians and lines workers who install and maintain network cable equipment within the broadband infrastructure deployment. They may upgrade a coaxial or optical fibre cable as part of a hybrid fibre coaxial (HFC) network, a broadband access network or a large customer private network.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. All customer cabling work in the telecommunications, fire, security and data industries must be performed by a registered cabler. All cablers are required to register with an Australian Communications and Media Authority (ACMA) accredited registrar. Refer to the ICT Information and Communications Technology Training Package Companion Volume Implementation Guide or the relevant regulator for specific guidance on requirements.

Unit Sector

Telecommunications – Cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Prepare for cable maintenance	1.1 Scope work by obtaining project plan from appropriate personnel and arrange for site access according to security arrangements 1.2 Notify appropriate personnel of identified worksite hazards

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ELEMENT	PERFORMANCE CRITERIA
	1.3 Determine cable route and type of cable from schedule, and identify and avoid other services 1.4 Obtain plant, tools, safety equipment and material to perform tasks safely and efficiently
2 Maintain cables, cable supports and enclosures	2.1 Clean area of debris, vegetation and foreign matter as required 2.2 Conduct visual inspections of cable infrastructure, enclosures and carrier interfaces for assessment of evident damages according to enterprise guidelines, and notify appropriate personnel 2.3 Check customer interface units for correct operation and rectify identified faults 2.4 Undertake remedial action on damages according to warranties and service level agreements, prior to maintenance routine 2.5 Perform maintenance tasks and tests in a safe manner and note activities on maintenance schedule
3 Complete maintenance documentation	3.1 Record test results, maintenance activities and corrective actions for future reference and complete maintenance schedule attendance chart according to enterprise requirements 3.2 Recover obsolete materials and return to appropriate point for disposal 3.3 Restore site according to enterprise or approving authority requirements and customer satisfaction 3.4 Notify appropriate personnel of job completion and obtain sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Reads and interprets plans, specifications and other documentation from a variety of sources and consolidates information to determine requirements • Analyses and consolidates test results and data from a range of sources, against defined criteria and requirements
Writing	• Prepares documentation and correspondence using clear language and correct spelling and terminology

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Skill	Description
	• Documents outcomes and changes to plans using industry relevant terminology and recognised plan symbols
Oral Communication	• Conveys and clarifies information effectively to a range of personnel using collaborative techniques, including active listening and questioning • Presents complex information in formal situations using clear and convincing language, tone and pace appropriate for the audience and purpose
Numeracy	• Makes calculations appropriate for measuring and estimating materials for maintenance works • Performs mathematical calculations to check, interpret and confirm results of system tests
Navigate the world of work	• Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements • Identifies and acts on issues that contravene relevant policies, procedures and legal requirements
Interact with others	• Uses a range of strategies, reads verbal and non-verbal signals, establishes a sense of connection and builds rapport with customers and co-workers
Get the work done	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes • Addresses less predictable problems and initiates standard procedures in response, applying problem solving processes in determining solutions

Unit Mapping Information

ICTCBL325 Maintain cable network supersedes and is equivalent to ICTCBL315 Maintain cable network.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL325 Maintain cable network

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- test cables and equipment and interpret results
- undertake remedial action on damages
- safely use specialised hand or power tools and equipment
- apply regulations and standards related to maintenance
- comply with all related health, safety and environmental requirements and work practices.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- relevant legislation, regulations, codes and standards
- cabling types, connectors and cabling structures
- connections to carrier infrastructure or equipment, such as main distribution frame (MDF) or customer interface units (CIU)
- maintenance requirements of equipment at customer premises
- electrical and optical properties to be measured
- health, safety and environmental considerations including:
  - electrical safety and lifting hazards
  - manufacturer requirements for safe operation of equipment
  - typical safety issues and challenges that occur on the worksite
- test methods and performance requirements for the maintenance work
- purpose of warranties and service level agreements in relation to maintenance work.

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Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s where maintenance of network cable can be conducted
- equipment currently used in industry
- relevant regulatory and equipment documentation that impacts on maintenance activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL326 Cut over metallic conductor cable in the access network

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to cut over and rearrange new and existing distribution cables in the telecommunications access network.

It applies to lines workers, jointers or technicians working for carriers, contractors or other service providers who work on new or existing copper cables in the access network.

Licensing, legislative, regulatory and certification requirements apply to telecommunications systems. Work functions in the occupational areas where this unit may be used may be subject to regulatory requirements. All customer cabling work in the telecommunications, fire, security and data industries must be performed by a registered cabler. All cablers are required to register with an Australian Communications and Media Authority (ACMA) accredited registrar. Refer to the ICT Information and Communications Technology Training Package Companion Volume Implementation Guide or the relevant regulator for specific guidance on requirements.

Unit Sector

Telecommunications – Cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Prepare for cable modification and cut over	1.1 Obtain project plan from appropriate personnel and use plan to scope work for job 1.2 Arrange for access to worksite, according to local government or other authority requirements 1.3 Inspect site to develop a work health and safety (WHS) plan and

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ELEMENT	PERFORMANCE CRITERIA
	notify appropriate personnel of identified safety hazards 1.4 Determine cable route and type of cable from project plan, taking into account the location of other services 1.5 Obtain required plant, tools, safety equipment and materials 1.6 Prepare detailed plan of cut over tasks according to project plan, job scope, legislative and other requirements, and obtain necessary approvals 1.7 Notify customer and network carrier of proposed cut over activity and proposed disruption to services that may impact on their service level agreements (SLAs) 1.8 Undertake additional preparatory non-jointing work, as required, according to customer practices and site conditions
2 Joint and cut over cable	2.1 Prepare cabinet, joint enclosure and jointing chambers for cable handling, entry and sealing requirements 2.2 Joint cable according to manufacturer guidelines 2.3 Test cable for performance and rectify cut over faults relating to cut over according to location, materials available and customer practices 2.4 Record test results for future reference 2.5 Seal all joints according to cable type, location, customer practices and manufacturer guidelines
3 Clean-up worksite and complete documentation	3.1 Complete reports on cut over installation and design amendments to reflect existing cable layout and according to enterprise requirements 3.2 Place and secure correctly labelled cables to supports in jointing chamber or cabinet according to customer practices 3.3 Mark-up as-built plans for return to customer for their records 3.4 Recover obsolete materials and return to appropriate point for disposal 3.5 Notify appropriate personnel about completion of cut over and obtain sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

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Skill	Description
Reading	• Interprets plans, specifications and other documentation from various sources • Consolidates information to determine requirements
Writing	• Documents outcomes and changes to plans using industry relevant terminology and recognised plan symbols • Prepares documentation and correspondence using clear language and correct spelling
Oral Communication	• Interacts effectively in verbal exchanges using appropriate language, and listening and questioning skills to convey and clarify information
Numeracy	• Makes calculations required for measuring and estimating materials for construction • Performs mathematical calculations to check, interpret and confirm results of system tests
Navigate the world of work	• Complies with policies, procedures and legislative requirements relevant to own role
Interact with others	• Uses appropriate practices and protocols to communicate effectively with colleagues, customers and others
Get the work done	• Plans, sequences and carries out tasks to meet required outcomes • Analyses task requirements to decide on appropriate equipment and practices • Uses problem solving processes to address less predictable problems, referring to standard procedures to determine solutions

Unit Mapping Information

ICTCBL326 Cut over metallic conductor cable in the access network supersedes and is equivalent to ICTCBL317 Cut over metallic conductor cable in the access network.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL326 Cut over metallic conductor cable in the access network

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- set up the site for a cabling cut over job
- use project plan to determine cable route and necessary fittings for installation
- use project plan to prepare detailed cut over plan including any anticipated outages that may affect service level agreements (SLAs)
- follow customer practices for the placement and sealing of cables
- separate, label and joint cable units and pairs according to industry practices
- test cable, rectify faults, record results and take appropriate action
- seal all joints and cabinets according to enterprise agreements
- comply with relevant work health and safety (WHS) and environmental requirements
- place and secure cables and mark-up as-built plans
- handover completed job to customer.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- requirements of legislation, regulations, codes, standards and customer practices relevant to work activity, in particular:
  - WHS requirements and environmental requirements relating to setting up an outdoor site and accessing underground facilities
- project plans and other formal agreements that impact on the work activity
- interpretation and methods to mark-up as-built plans

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- common cabling types, connectors and cabling structures (including conductor identification/cable colour coding)
- manufacturer jointing and sealing guidelines and practices
- process of cutting over a cable for various scenarios including:
  - aerial lead-in
  - underground lead-in
- features and operating conditions of test equipment and how the equipment is used to measure cable performance
- typical issues and challenges that may cause delays in job completion, and how these could be addressed
- purpose of warranties and SLAs
- mark-up as-built plans .
-

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- cable systems and jointing equipment required to cut over cable
- cabling infrastructure required for installation
- regulatory and equipment documentation that impacts on work activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL329 Install underground cable for communications applications

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to install underground cable for all communications applications in access networks or customer premises.

It applies to technical staff who install cable for new installations and upgrades to telecommunications cabling infrastructure for communications applications including broadcasting or reception (digital video broadcasting – terrestrial [DVB-T], satellite [DVB-S], long term evolution [LTE]), closed-circuit television (CCTV), digital and analog, telephony, data, video, computer networks, local area networks (LANs), wide area networks (WANs), fibre optic networks and multimedia.

Licensing, legislative, regulatory and certification requirements apply to telecommunications systems. Work functions in the occupational areas where this unit may be used may be subject to regulatory requirements and/or the carrier's guidelines. All customer cabling work in the telecommunications, fire, security and data industries must be performed by a registered cabler. All cablers are required to register with an Australian Communications and Media Authority (ACMA) accredited registrar. Refer to the ICT Information and Communications Technology Training Package Companion Volume Implementation Guide or the relevant regulator for specific guidance on requirements.

Unit Sector

Telecommunications – Cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for underground cable	1.1 Access site according to required enterprise procedures

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ELEMENT	PERFORMANCE CRITERIA
hauling	1.2 Verify cable installation requirements from plans and recognise constraints 1.3 Identify from plans, correct duct to be hauled 1.4 Inform appropriate personnel of existing and potential worksite hazards 1.5 Obtain information about location of other services from relevant authorities 1.6 Select suitable tools, equipment and protective equipment to meet required industry standards 1.7 Check for dangerous gases and place guards around open manholes following work health and safety (WHS) and environmental requirements 1.8 Confirm correct duct/conduit to be utilised for hauling at site and access to intermediate manholes/pits along the hauling route 1.9 Rod and rope the conduit/duct to be hauled 1.10 Set-up cable installation equipment according to manufacturer requirements and enterprise guidelines 1.11 Clean debris and obstructions from conduit using appropriate mandrels 1.12 Seal cable ends to exclude entrance of foreign matter
2. Haul underground cable	2.1 Run hauling feeder through conduit to enable cable hauling 2.2 Use rodding techniques to prove that conduit is clear for hauling 2.3 Attach cable to hauling feeder according to manufacturer specifications 2.4 Employ cable slippers or rollers to ensure no sheath damage when hauling into and out of enclosures 2.5 Lubricate cable and haul evenly at correct tension to reduce risk of cable damage 2.6 Maintain sufficient cable length allowance for jointing and ensure cable is housed within bending radius tolerance for cable materials in an underground enclosure 2.7 Maintain cable and services separations in parallel runs and crossovers according to manufacturer and regulatory requirements
3. Seal and secure cable and complete all documentation	3.1 Tag all cables to enable future identification 3.2 Seal cable ends according to enterprise requirements to prevent entrance of foreign material 3.3 Place cable on supports in enclosures to reduce damage to

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ELEMENT	PERFORMANCE CRITERIA
	conductors and enable ease of access for maintenance 3.4 Fit voltage protection devices to all cables with metallic component as required 3.5 Complete installation reports and design amendments accurately, and file promptly according to customer requirements 3.6 Reinstate site to customer satisfaction and dispose of waste in environmentally safe manner as required 3.7 Notify appropriate personnel and obtain sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Interprets textual information from plans, specifications, standards and regulations to identify relevant and key information
Writing	• Documents outcomes and changes to plans using industry relevant terminology and recognised plan symbols • Prepares documentation and correspondence using clear language and correct spelling and terminology
Oral Communication	• Uses collaborative and inclusive techniques, including active listening and questioning, to convey and clarify information and to confirm understanding • Clearly explains detailed information using language, tone and pace appropriate to the audience
Numeracy	• Makes calculations appropriate for measuring and estimating materials for hauling
Navigate the world of work	• Accepts responsibility and ownership for the task, and makes decisions on completion parameters and the need for coordination with others • Identifies and acts on issues that contravene relevant policies, procedures and legal requirements
Interact with others	• Uses a range of strategies and reads verbal and non-verbal signals, establishes a sense of connection and builds rapport with clients and workmates
Get the work done	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes • Accepts responsibility for addressing less predictable problems and

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Skill	Description
	initiates procedures in response, applying problem solving processes in determining a solution

Unit Mapping Information

No equivalent unit. Supersedes and is not equivalent to ICTCBL308 Install underground cable.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL329 Install underground cable for communications applications

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- use the correct type of rope for cable hauling
- use various rodding, roping and mandrel techniques as prior requirements to hauling cable
- haul underground cable by applying work health and safety (WHS) requirements, work practices and industry standards
- use specialised hand or power tools and equipment for hauling cabling safely
- read and interpret plan drawings
- restore site and complete documentation
- comply with all related safety requirements and work practices.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- Australian Communications and Media Authority (ACMA) regulatory requirements for Telecommunications Cabling Provider Rules
- legislation, regulations, codes, standards and other formal agreements that impact on hauling
- rodding, roping and mandrel techniques
- features and operating requirements of hauling equipment
- industry and manufacturer requirements for safe operation of hauling equipment
- health, safety and environmental requirements relating to hauling and site conditions, including typical safety issues and challenges that occur on worksites
- precautions associated with over-hauling through occupied conduits.

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Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s where installation of underground cable can be conducted
- installation equipment currently used in industry
- relevant regulatory and equipment documentation that impacts on cable installation activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards. Refer also to the *Requirements for assessors* in the ICT Information and Communications Technology Training Package Companion Volume Implementation Guide.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL330 Splice and terminate optical fibre cable for telecommunications projects

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to splice and terminate optical fibre cable within an optical telecommunications transmission environment for new installations or upgrades of an optical backbone or access network, to achieve greater bandwidth and capacity required by emerging technology convergence for next generation networks (NGNs).

It applies to technical staff who splice and terminate optical fibre cable for telecommunications projects for commercial or industrial fibre to the premises (FTTP) non-mechanical splicing installations.

Licensing, legislative, regulatory and certification requirements apply to telecommunications systems. All customer cabling work in the telecommunications, fire, security and data industries must be performed by a registered cabler. All cablers are required to register with an Australian Communications and Media Authority (ACMA) accredited registrar. Cablers working with live optical fibre must obtain enterprise certification before commencing splicing work.

Unit Sector

Telecommunications – Cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for splicing	1.1 Select safety equipment to protect self and public according to industry guidelines and work health and safety (WHS) practices 1.2 Confirm layout of installation according to physical conditions at

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ELEMENT	PERFORMANCE CRITERIA
	site and relevant legislation, regulations, codes and standards 1.3 Inform appropriate personnel of identified worksite hazards 1.4 Locate other services from relevant authorities according to industry guidelines and safe practices 1.5 Test for dangerous gases and place guards around open manholes according to WHS and environmental requirements 1.6 Obtain approval for alterations to design according to industry guidelines
2. Check existing optical fibre cable	2.1 Verify that cable is installed according to installation plan 2.2 Visually inspect cable for signs of sheath damage and seek instructions from service provider when damage is identified 2.2 Maintain minimum bend ratios according to manufacturer specifications to prevent cable damage and signal degradation 2.3 Secure cable according to safe industry practice to avoid cable and sheath damage
3. Splice optical fibre cable	3.1 Maintain safe work practices when using equipment to identify and verify fibre is not live before commencing splicing 3.2 Seek instructions from service provider where fibre is live and, on receipt of required enterprise certification, follow service provider instructions accordingly 3.3 Prepare cable end to expose optical fibres according to splicing method and manufacturer specifications 3.4 Prepare and splice fibres using safe industry practice according to industry specifications 3.5 Install and clean optical connectors with recommended cleaning material and re-inspect 3.6 Test completed links for proof of performance according to industry standards
4. Terminate optical fibre cable	4.1 Select connector unit to suit terminating frame according to design specifications 4.2 Terminate cable according to design method and manufacturer specifications 4.3 Test termination for transmission loss and light levels, and re-terminate if transmission loss exceeds industry standard 4.4 Install protection devices on connectors to protect from exposure and contaminants 4.5 Label and lay up cables in enclosure according to manufacturer

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ELEMENT	PERFORMANCE CRITERIA
	instructions and industry guidelines
5. Finish job and report	5.1 Remove waste and reinstate site according to industry guidelines 5.2 Prepare reports, including test results and alterations to plans, according to telecommunications industry or enterprise policies 5.3 Notify appropriate personnel of work completion and obtain sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Understands familiar texts of limited complexity that may incorporate graphs, tables and charts • Recognises the structures and distinguishing features of a range of familiar text types
Writing	• Interrelates ideas and information and some support material when writing about familiar topics
Oral Communication	• Demonstrates an awareness of the need to vary structure, style, tone and vocabulary to meet the requirements of the audience, context and purpose
Numeracy	• Interprets and comprehends whole numbers and familiar or routine fractions, decimals and percentages
Navigate the world of work	• Takes responsibility for decisions about when and how to complete tasks and coordinate with others • Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work context, and draws attention to any issues that may affect self or others
Get the work done	• Implements actions as per plan, making slight adjustments if necessary, and addressing some unexpected issues • Initiates standard procedures when responding to familiar problems within immediate context
Interacts with others	• Takes responsibility to obtain customer sign-off for work completed

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Unit Mapping Information

No equivalent unit. Supersedes and is not equivalent to ICTCBL208 Splice and terminate optical fibre cable for carriers and service providers.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL330 Splice and terminate optical fibre cable for telecommunications projects

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- splice, terminate and test optical fibre cable, applying safety precautions when working with laser-based systems and ensuring that required enterprise certification is first obtained if working with live fibre
- splice at least 12 fibres and house in industry recognised enclosures and underground closures according to manufacturer instructions
- install a pigtail that is fusion spliced to cable fibre
- inspect and clean optical connectors
- complete relevant documentation according to manufacturer and design requirements
- provide customer report documenting installation and test results, according to industry standards
- comply with all related work health and safety (WHS) requirements and work practices.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- specific WHS and environmental requirements relating to the activity and site conditions, including hazardous gases
- relevant safety standards applicable to the operation of laser products
- safety precautions when working with laser-based systems
- industry and enterprise policies and procedures when splicing optical fibre cable
- causes of signal strength loss in optical fibre
- colour coding of fibres

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- features and operating requirements of test equipment for optical fibre cable
- information required to operate equipment according to a test specification
- optical fibre equipment and manufacturer requirement for safe operation
- techniques for types of termination, including:
  - direct termination
  - fusion splicing
  - mechanical splicing
- test methods and performance requirements
- types of optical cable
- relevant authorities that may be involved in optical fibre installations.
-

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s where splicing and termination of optical fibre cable can be conducted
- special purpose tools, equipment and materials currently used in industry such as optical fibre testing equipment
- relevant regulatory and equipment documentation that impacts on optical fibre cable installation activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL331 Conduct basic identification and fault-finding within cabling networks and customer equipment

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required for fault-finding and testing for the presence of an operational subscriber line at network termination devices (NTDs). These lines are crucial in connecting customer equipment to the carrier for the purposes of providing telephony and internet protocol (IP) data services. These network providers use convergent technologies to deliver services of next generation networks (NGNs).

It applies to technicians and cable installers who install and maintain IP-based equipment for customer and service providers for services, such as internet protocol TV (IPTV), IP security, digital home networks, IP-based cable access, TV (CATV), IP core and access networks, home automation, interactive TV, smart grids and cloud computing

Australian Communications and Media Authority (ACMA) cabling registration applies to maintaining or installing new cable elements. Refer to the ICT Information and Communications Technology Companion Volume Implementation Guide or the relevant regulator for details of licensing, legislative or certification requirements.

Unit Sector

Telecommunications – Cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan to locate and rectify basic faults	1.1 Arrange site access according to enterprise procedures and customer requirements 1.2 Obtain information from customer about nature of the fault

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ELEMENT	PERFORMANCE CRITERIA
	1.3 Obtain suitable tools and test equipment 1.4 Obtain appropriate personal protective equipment (PPE) 1.5. Identify requirements for basic identification and fault-finding of cabling from network termination device (NTD) to customer equipment and seek assistance as required
2. Identify and confirm customer and NTD equipment in place	2.1 Identify type of NTD used and its application to satellite, fibre, fixed radio, hybrid fibre coaxial (HFC) or digital subscriber line (DSL) telecommunications network/s 2.2 Identify and document typical equipment connected to NTD 2.3 Confirm correct equipment is being used for installed NTD
3. Identify and inspect NTD and customer equipment cables and patch cords	3.1 Check that NTD equipment and customer equipment are interconnected utilising cables and patch cords 3.2 Ensure all cabling sockets are visually intact and undamaged 3.3 Ensure all patch cords are visually intact and undamaged 3.4 Complete wire mapping to ensure new work is completed correctly and is in good working order 3.5 Ensure all cable, patch cords and cabling products are of the same signal bandwidth category 3.6 Obtain NTD and customer equipment user guides 3.7 Utilise NTD and customer equipment user guides to determine correct light-emitting diode (LED) status that indicates the equipment is operating correctly 3.8 Identify and record visual status of all customer equipment and NTD equipment prior to any investigative process
4. Repair faults found in NTD and customer equipment	4.1 Follow appropriate user guide fault tables to remedy equipment status according to equipment manufacturer guidelines 4.2 Conduct basic fault-finding using methodical and safe practices suitable for system and problem type 4.3 Ensure cabling or patch cord elements are correctly terminated utilising wire mapping testers according to industry standards 4.4 Correct faulty cabling by re-terminating sockets, replacing sockets and re-terminating cable or replacing damaged cable elements 4.5 Correct faulty patch cords by re-terminating plugs or replacing with new patch cords 4.6 Power down equipment for 30 seconds and reboot equipment as

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ELEMENT	PERFORMANCE CRITERIA
	a remedy to problem/s 4.7 Report failure of equipment to obtain normal working status to customer/supervisor and/or NTD owner for a determination to replace faulty equipment or to have equipment repaired 4.8 Ensure test equipment power adaptors are providing correct voltage to equipment, using an appropriate test device, and replace power adaptors as required 4.9 Ensure NTD equipment and customer equipment is communicating with internet by exploring internet with a computer browser gaining correct page displays from a website 4.10 Ensure customer device is connected to a wi-fi modem using service set identifier (SSID) and password
5. Complete documentation and clean-up worksite	5.1 Advise customer of successful fault clearance and obtain sign-off for customer agreement once fault is resolved and for invoicing purposes 5.2 Complete all records as required 5.3 Complete reports to justify fault diagnosis and rectification methodology as required 5.4 Remove all waste and debris from worksite and dispose of according to environmental requirements 5.5 Restore changes made to worksite during fault repair, according to industry standards

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Identifies, plans and implements strategies to manage gaps in technical knowledge
Writing	• Recognises when unknown words are essential to meaning and uses a range of decoding strategies to identify them • Interprets textual information from relevant sources to identify relevant and key information
Oral Communication	• Uses clear language and concepts, and tone and pace appropriate for the audience and purpose

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Skill	Description
Numeracy	• Articulates information clearly, using specific and relevant language suitable to audience to convey recommendations and provide verbal reports • Uses listening and questioning techniques to confirm understanding
Navigate the world of work	• Takes readings and measurements and interprets results
Interact with others	• Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work context, and draws attention to any issues that may affect self or others • Recognises and follows explicit and implicit protocols and meets expectations associated with own role
Get the work done	• Identifies and follows accepted communication practices and protocols when liaising with internal and external personnel on technical and operational matters

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL331 Conduct basic identification and fault-finding within cabling networks and customer equipment

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to do this on at least one of the following network termination device (NTD)/customer equipment systems:

- satellite modem/ethernet/telephony
- fixed wireless modem/ethernet/telephony
- fibre optic TX-RX/ethernet/telephony
- hybrid fibre coaxial (HFC) modem/ethernet/telephony
- digital subscriber line (DSL) modem/ethernet/telephony.

Depending on the system/s the candidate works on, the candidate must demonstrate the ability to:

- connect NTDs to customer equipment
- set-up and operate test instruments
- gather appropriate instrument test cables and adaptors
- determine status of cables/equipment to be tested such as safety and live or inactive status
- identify different cable types and their association with NTD/customer equipment
- identify whether or not NTD/customer equipment is operating correctly
- search the internet for equipment user guides
- replace faulty cable or patch cords after testing or identifying damage
- replace or re-terminate faulty sockets or connectors
- perform a browser search of a web page to confirm system is working.

Knowledge Evidence

The candidate must demonstrate the knowledge required to complete the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

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- relevant legislation, regulations, codes, standards and associated industry guidelines, in particular:
  - Australian Communications and Media Authority (ACMA) regulations
  - work health and safety (WHS) regulations for electrical, fibre optic and electromagnetic telecommunications systems
- hazard identification such as laser light and safety signs used for telecommunications equipment
- typical equipment connected to NTD including:
  - personal computer devices including:
    - desktop/mobile computing devices
    - smartphone
    - printers
    - other devices
  - wi-fi modem/switch/router
  - DSL filters
  - internet service provider (ISP) gateway switch/router (ISP or retailer)
    - internet protocol TV (IPTV)
  - IP security, digital home networks
  - IP-based cable access TV (CATV)
  - IP core and access networks
  - home automation
  - interactive TV
  - smart grids
  - cloud computing
- basic interconnection concepts for NTD and customer equipment application including:
  - fibre optic
  - fixed radio
  - satellite
  - HFC
  - DSL twisted pair
- cable types used for NTD/customer equipment connections including:
  - Cat 5e unshielded twisted pair (UTP) cable
  - Cat 6 UTP cable
  - Cat 6/7 shielded twisted pair (STP) cable
  - RG6 coaxial cable (quad shielded)
  - fibre optic and other cable types for recognition/demonstration of the NTD network side
  - appropriate connectors for testing cables
  - appropriate adaptors and test leads for test instruments and cables to be tested
- common basic tests utilised with each NTD/customer equipment system using:

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  - structured cabling certifiers
  - structured cabling verification/qualification tester
  - wire mapper
  - oscillator and probe
  - multimeter
  - RF power measurement (RX)
  - time-domain reflectometer (TDR), available in SC certifiers
  - ADSL/VDSL test instruments
  - other appropriate test equipment
- NTD or customer equipment user guides
- purpose and use of test results
- fault escalation enterprise processes.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- satellite modem/ethernet/telephony
- fixed wireless modem/ethernet/telephony
- fibre optic TX-RX/ethernet/telephony
- HFC modem/ethernet/telephony
- DSL modem/ethernet/telephony.

As a minimum, customer equipment may also require a portable computer, wi-fi modems, switch/router or devices that combine these parameters

Cable segments that use passive devices will also require access to RF splitters or DSL filters.

Assessors of this unit must satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL332 Locate, identify and rectify copper cable faults

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to use systematic and logical fault-finding techniques according to all safety requirements and work practices commonly used in fault remediation.

It applies to copper cable jointers who install and maintain telecommunications cable networks.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for fault- finding activity	1.1 Determine, from documentation or discussion with appropriate personnel, work to be undertaken, including reported fault location 1.2 Access site according to workplace and/or enterprise procedures 1.3 Identify existing and potential site hazards, assess risks and implement risk control measures 1.4 Prepare testing in consultation with others affected by the proposed work and sequence work appropriately 1.5 Obtain required materials for testing, reporting and rectification work according to enterprise procedures and job/work ticket requirements

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ELEMENT	PERFORMANCE CRITERIA
	1.6 Obtain required tools, equipment and testing devices according to enterprise procedures and check for correct operation and safety
2. Conduct activities to test and locate cable faults	2.1 Establish nature of fault through analysis of source, history and available information 2.2 Select and use appropriate test equipment to locate, diagnose and analyse fault 2.3 Conduct tests according to selected test equipment operating instructions and safety requirements, and ensure diagnostic process aligns to customer service requirements 2.4 Identify and test for fault efficiently and sustainably 2.5 Evaluate test results to determine cause of fault/s using appropriate methods and processes
3. Rectify fault	3.1 Carry out work health and safety (WHS) activities prior to entering a pit or manhole and protect underground assets prior to excavation 3.2 Physically locate fault position in a length of cable or buried joint 3.3 Rectify fault or escalate to appropriate level 3.4 Discuss and document established methods for dealing with unexpected situations with appropriate personnel 3.5 Confirm that current standard of performance for copper cables will be viable after fault remediation work 3.6 Confirm integrity of repaired fault using appropriate carrier testing processes
4. Report fault-findings and rectification	4.1 Report fault identification and fault clearance 4.2 Update fault records 4.3 Restore worksite to customer satisfaction and acceptable industry standards 4.4 Notify customer and/or relevant parties to obtain sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

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Skill	Description
Reading	• Recognises and interprets technical documentation to determine important information
Writing	• Uses clear, specific and industry-related terminology to develop basic reports and in all written tasks
Oral Communication	• Liaises with customers about technical requirements using specific and relevant language • Uses listening and questioning techniques to confirm understanding
Numeracy	• Evaluates and reviews technical data for specifications
Navigate the world of work	• Appreciates implications of legal and regulatory responsibilities related to own role • Seeks advice about expectations when preparing for work
Get the work done	• Determines job priorities and works logically and systematically to undertake clearly defined and familiar tasks • Implements actions according to a predetermined plan, making slight adjustments if necessary and addressing some unexpected issues • Takes responsibility for routine decision-making by selecting from a range of predetermined options in routine situations, identifying and taking some situational factors into account • Diagnoses and implements standard solutions to for routine problems, seeking assistance from more experienced colleagues when required • Understands purposes and specific functions of common fault location equipment and uses them effectively to complete routine tasks

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL332 Locate, identify and rectify copper cable faults

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- discuss faults with customers and appropriate personnel
- identify a minimum of three different types of faults when testing telecommunications cables
- analyse test results and identify and rectify a minimum of three different types of faults
- use systematic, logical and appropriate fault-finding techniques for field-testing situations
- comply with all related work health and safety (WHS) requirements and work practices.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- WHS and environmental requirements
- basic communications testing and measuring devices and techniques including:
  - types and applications of testing/measuring devices including voltage testers, multimeters, copper time domain reflectometers (TDRs), bridge meggers, continuity testers and insulation resistance testers
  - features of testing/measuring devices including user calibration, parameter and range settings
  - safety procedures
  - circuit arrangement of test/measuring devices
  - readings
  - storage, maintenance and care of test/measuring devices

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    - Australian Standard quality assurance requirements for test equipment calibration certification
- carrier copper network, architecture and cable layout including:
    - seven different types of fault conditions that may affect a customer service in terms of how information is carried
    - continuity of a circuit to facilitate a customer service
    - types of network components and terminal points such as cabinets, pillars, main distribution frames, internal distribution frames, pits, manholes and joints
    - different types of joints (inline, single-ended, pressurised and unpressurised)
- performance parameters associated with copper cables including:
    - electrical circuit characteristics of voltage, current and resistance/impedance
    - open circuit, short circuit and pair continuity
    - split legs, reversed legs, contacts, earths and foreign battery
    - attenuation
    - insulation resistance (leakage)
    - loop resistance
    - characteristic impedance
- how to evaluate test results for compliance with carrier requirements for copper cables including:
    - tests required to evaluate a given performance parameter
    - test equipment and leads needed to evaluate a given performance parameter
    - operation of test equipment for correct evaluation of specific cable performance parameters and to obtain accurate and reliable results
    - transmission performance requirements
- behaviour of faulty cable network elements, including symptoms and impact on cable network
- systematic and logical fault-finding
- interpretation of test results and cable network element/system specifications
- possible fault positions in a length of cable or buried joint including:
    - joint in a pit
    - manhole
    - buried.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s on which copper cable network testing and fault-finding can be conducted
- line transmission and measurement equipment currently used in industry

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- system documentation and other site-related documentation required to conduct tests and fault-finding investigations for a minimum of three different types of faults.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTCBL333 Install aerial cable for communications applications

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to install aerial cable in domestic, commercial or industrial communications applications that include digital and analog, telephony, data, video, digital broadcasting, computer networks, local area networks (LANs), wide area networks (WANs), master antenna television (MATV), cable television (CATV), closed-circuit television (CCTV), long-term evolution (LTE) and multimedia.

It applies to technical staff installing aerial cable for customer and carrier networks. Installations are completed outdoors on customer premises using basic rigging procedures, methods and equipment for working safely at heights.

Licensing, legislative, regulatory and certification requirements apply to telecommunications systems. Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. All customer cabling work in the telecommunications, fire, security and data industries must be performed by a registered cabler. All cablers are required to register with an Australian Communications and Media Authority (ACMA) accredited registrar. Refer to the ICT Information and Communications Technology Training Package Companion Volume Implementation Guide or the relevant regulator for specific guidance on requirements.

Unit Sector

Telecommunications – Cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for aerial cable installation	1.1 Access site according to required procedures 1.2 Verify location, cable bearer type and specific requirements of the proposed aerial cable installation according to appropriate plans and

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ELEMENT	PERFORMANCE CRITERIA
	recognised constraints 1.3 Obtain information about location of other services from relevant authorities 1.4 Inform appropriate personnel of existing and potential worksite hazards 1.5 Select tools and equipment required for safe work practice 1.6 Erect barriers according to safety requirements 1.7 Assess support structure safety according to standard working conditions and proceed according to this assessment 1.8 Identify and set up traffic management plan as required 1.9 Set-up cable installation equipment according to manufacturer requirements and enterprise guidelines
2. Attach aerial cable to catenary	2.1 Select type of cable bearer 2.2 Use basic rigging procedures, methods and equipment for working safely at heights 2.3 Secure pole hardware permanently to support structure using safe installation practices, according to specifications 2.4 Haul and secure cable following health and safety requirements, manufacturer specifications and environmental requirements 2.5 Ensure minimum sag heights are achieved
3.Install self-supporting aerial cable	3.1 Select type of cable for installation 3.2 Use basic rigging procedures, methods and equipment for working safely at heights 3.3 Secure pole hardware permanently to support structure using safe installation practices according to specifications 3.4 Haul and secure cable following health and safety requirements, manufacturer specifications and environmental requirements 3.5 Ensure minimum sag heights are achieved
4. Seal and secure aerial cable	4.1 Seal cable ends to prevent entrance of foreign material 4.2 Secure cable loop, as required, on support structure and ensure equipment is left in a tidy manner to reduce damage to conductors or fibres and to enable ease of access for effective maintenance 4.3 Weatherproof building entry points, as required 4.4 Fit over-voltage protection devices to all cables with metallic component as required

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ELEMENT	PERFORMANCE CRITERIA
	4.5 Complete installation reports and design amendments accurately and file promptly according to industry requirements
5. Restore site and complete documentation	5.1 Restore worksite to customer satisfaction 5.2 Complete reports on installation work and provide to appropriate personnel 5.3 Notify customer and obtain sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Analyses plans, regulations and other documentation from a variety of sources and consolidates information to determine requirements
Writing	• Prepares documentation and correspondence using clear language and correct spelling and terminology • Documents outcomes and changes to plans using industry relevant terminology and recognised plan symbols
Oral Communication	• Interacts effectively in verbal exchanges using active listening, questioning and reading of verbal and non-verbal signals to convey and clarify information
Numeracy	• Makes calculations appropriate for measuring and estimating materials for construction
Navigate the world of work	• Accepts responsibility and ownership for the task and makes decisions on completion parameters and the need for coordination with others • Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements
Interact with others	• Uses a range of strategies to establish a sense of connection and build rapport with clients and workmates
Get the work done	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes • Makes routine decisions and implements procedures for routine tasks, using formal decision making processes for more complex and non-routine situations

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Unit Mapping Information

No equivalent unit. Supersedes and is not equivalent to ICTCBL310 Install aerial cable.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL333 Install aerial cable for communications applications

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria and foundation skills, and to:

- prepare site for installation, ensuring all relevant authorities have been notified and approvals obtained prior to commencement
- install various aerial cable using effective practices including:
  - integral bearer
  - self-supporting
  - stranded support (catenary)
- comply with all related health and safety requirements and work practices.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria and foundation skills, which includes knowledge about:

- legislation, regulations, codes, standards, authorisations and other formal agreements that impact on aerial cabling, in particular:
  - Australian Communications and Media Authority (ACMA) competency requirements for Telecommunications Cabling Provider Rules as they apply to aerial cable
  - minimum sag heights
  - health, safety and environmental requirements relating to aerial cabling and working at heights
  - appropriate authorisations for pole access
- features and operating requirements of equipment used for aerial cabling and rigging

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- manufacturer and industry requirements for safe operation of installation and rigging equipment
- basic traffic management plans
- typical worksite issues and challenges.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s where aerial cable installation can be conducted
- aerial installation equipment currently used in industry
- aerial cables including:
  - integral bearer
  - self-supporting
  - stranded support (catenary)
- relevant regulatory and equipment documentation that impacts on aerial cable installation activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards. Refer also to the *Requirements for assessors* in the ICT Information and Communications Technology Training Package Companion Volume Implementation Guide.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL334 Install underground enclosures and conduit

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to install underground enclosures and conduit, either direct buried or in pits, for new or cable maintenance tasks in access networks for outdoor installations within customer premises or in public locations permitted by the Australian Communications and Media Authority (ACMA).

It applies to technical staff who install underground infrastructure for new and upgraded telecommunications cabling for domestic, commercial or industrial customers.

Licensing, legislative, regulatory and certification requirements apply to telecommunications systems. Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. All customer cabling work in the telecommunications, fire, security and data industries must be performed by a registered cabler. All cablers are required to register with an Australian Communications and Media Authority (ACMA) accredited registrar. Refer to the ICT Information and Communications Technology Training Package Companion Volume Implementation Guide or the relevant regulator for specific guidance on requirements.

Unit Sector

Telecommunications – Cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for installation of underground enclosure and conduit	1.1 Obtain construction design plan from appropriate personnel and determine and obtain type of underground enclosure specified 1.2 Arrange access to site according to required enterprise procedure 1.3 Inform appropriate personnel of existing and potential worksite

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ELEMENT	PERFORMANCE CRITERIA
	hazards 1.4 Verify location of proposed installation according to appropriate plans obtained from authorised personnel 1.5 Obtain information about location of other services from relevant authorities 1.6 Organise plant, tools and equipment for given work and safe work practice 1.7 Place recognised barriers during construction according to safety and enterprise requirements
2. Install enclosure and conduit	2.1 Excavate site, maintaining stability and allowing ease of access 2.2 Install enclosure or pit according to design specifications, and work health and safety (WHS) and environmental requirements 2.3 Install conduit according to specifications and manufacturer requirements, ensuring internal surfaces are free from impediments and sharp edges for cable hauling 2.4 Seal conduit entry into enclosure against foreign matter 2.5 Install cable support structure and access facilities in pits according to specifications
3. Restore site and complete documentation	3.1 Complete backfill safely using suitable soil and materials that ensure conduit protection 3.2 Recover obsolete materials and equipment and return to appropriate point for disposal 3.3 Restore site according to requirements of enterprise or approving authority and customer satisfaction 3.4 Complete reports on installation and design amendments accurately and file promptly according to enterprise requirements 3.5 Notify appropriate personnel of job completion and obtain sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Critically analyses plans and other documentation from a variety of sources and consolidates information to determine requirements

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Skill	Description
Writing	• Prepares documentation and correspondence using clear language and correct spelling and terminology • Accurately records and completes information in enterprise systems
Oral Communication	• Interacts effectively in verbal exchanges using active listening, questioning and reading of verbal and non-verbal signals to convey and clarify information • Clearly explains detailed information using language, tone and pace appropriate to the audience
Numeracy	• Takes measurements and uses them for work layout and construction • Makes calculations appropriate for measuring and estimating materials for construction
Navigate the world of work	• Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements • Identifies and acts on issues that contravene relevant policies, procedures and legal requirements
Interact with others	• Uses a range of strategies to establish a sense of connection and build rapport with customers and workmates • Identifies and explores differences in a diverse range of people in the work context and makes adjustments to communication in recognition of these differences
Get the work done	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes • Makes routine decisions and implements standard procedures for routine tasks, using formal decision making processes for more complex and non-routine situations

Unit Mapping Information

ICTCBL334 Install underground enclosures and conduit supersedes and is equivalent to ICTCBL307 Install underground enclosures and conduit.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL334 Install underground enclosures and conduit

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria and foundation skills, and to:

- interpret and apply design plans and prepare for construction
- use specialised hand or power tools and equipment normally used for excavation, pipe, pit and conduit installation and site restoration, safely
- excavate for installation of an enclosure and conduit according to industry standards, applying related health and safety requirements and work practices
- install enclosure and conduit according to specifications and industry standards.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria and foundation skills, which includes knowledge about:

- features and operating requirements of excavation and installation to select appropriate equipment
- existing underground services
- manufacturer requirements for safe operation of equipment
- legislation, regulations, codes, standards and other formal agreements that impact on the work activity
- construction design plans
- specific work health and safety and environmental requirements relating to the activity and site conditions
- components required for enclosures, pits and conduit
- methods of installing enclosures and conduit as they apply to manufacturer specifications and regulatory requirements

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- typical issues and challenges that occur on site.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s where installation of underground enclosures and conduit can be conducted
- installation pits, enclosures and conduit currently used in industry
- relevant regulatory and equipment documentation that impacts on cable installation activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards. Refer also to the *Requirements for assessors* in the ICT Information and Communications Technology Training Package Companion Volume Implementation Guide.

Links

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ICTCBL335 Construct aerial cable supports

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to install aerial cable supports in domestic, commercial or industrial communications applications, including digital and analog, telephony, data, video, digital broadcasting, master antenna television (MATV), cable television (CATV), closed-circuit television (CCTV), long-term evolution (LTE) computer networks, local area networks (LANs), wide area networks (WANs) and multimedia.

It applies to technical staff installing aerial cable for customers and carrier networks. Installations are completed outdoors on customer premises using basic rigging procedures, methods and equipment for working safely at heights.

Licensing, legislative, regulatory and certification requirements apply to telecommunications systems and working at heights. Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. All customer cabling work in the telecommunications, fire, security and data industries must be performed by a registered cabler. All cablers are required to register with an Australian Communications and Media Authority (ACMA) accredited registrar. Refer to the ICT Information and Communications Technology Training Package Companion Volume Implementation Guide or the relevant regulator for specific guidance on requirements.

Unit Sector

Telecommunications – Cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare site for installation	1.1 Access site according to required enterprise procedures 1.2 Verify aerial cable support installation requirements according to

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ELEMENT	PERFORMANCE CRITERIA
	approved designs, and recognise and plan for constraints 1.3 Obtain information about location of other services from relevant authorities 1.4 Inform appropriate personnel of existing and potential worksite hazards 1.5 Assess support structure safety according to standard working conditions and proceed according to this assessment 1.6 Set up cable support installation equipment according to manufacturer requirements and enterprise guidelines
2. Install aerial support structures	2.1 Select type of aerial cable support for catenary wire or integrated bearer or self-supporting cable installation 2.2 Use basic rigging procedures, methods and equipment for working safely at heights 2.3 Erect barriers and signage according to safety requirements 2.4 Construct support foundations to specifications and provide for safe and secure operation of support structure 2.5 Install aerial cable supports securely and safely according to plan, manufacturer specifications, industry standards and authorisations
3. Restore site and complete documentation	3.1 Undertake quality check on completed installation 3.2 Reinstate site to identified requirements 3.3 Complete reports on installation and design amendments and record according to telecommunications industry requirements 3.4 Notify customer and obtain sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Analyses plans and other documentation from a variety of sources and consolidates information to determine construction requirements
Writing	• Accurately records and completes enterprise documents and correspondence using clear language and correct spelling, grammar and terminology

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Skill	Description
Oral Communication	• Interacts effectively in verbal exchanges using active listening, questioning and reading of verbal and non-verbal signals to convey and clarify information • Clearly explains detailed information using language, tone and pace appropriate to the audience
Numeracy	• Takes measurements and use them for work layout and construction • Makes calculations appropriate for measuring and estimating materials for construction
Navigate the world of work	• Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements • Seeks advice and clarification for new activities
Interact with others	• Uses a range of strategies to establish a sense of connection and build rapport with customers and work colleagues
Get the work done	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes • Makes decisions and implements standard procedures for routine tasks, using formal decision making processes for more complex and non-routine situations • Accepts responsibility for addressing less predictable problems and applies problem solving processes in determining a solution

Unit Mapping Information

ICTCBL335 Construct aerial cable supports supersedes and is equivalent to ICTCBL309 Construct aerial cable supports.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL335 Construct aerial cable supports

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate, on two occasions, the ability to perform the tasks outlined in the elements, performance criteria and foundation skills, and to:

- prepare site for aerial cable support construction, ensuring all relevant authorities have been notified and approvals obtained prior to commencement
- install aerial support structures using pole and wall supports, applying all related health and safety requirements and work practices and manufacturer requirements

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria and foundation skills, which includes knowledge about:

- relevant legislation, regulations, codes, and standards and other formal agreements that impact on aerial cable supports, in particular:
  - Australian Communications and Media Authority (ACMA) regulatory requirements for Telecommunications Cabling Provider Rules as they apply to aerial cabling
- features and operating requirements of cable supports and installation equipment and authorisations
- requirements for safe operation of equipment
- safety precautions required when working at heights and on pole infrastructure
- other health and safety and environmental requirements relating to the activity, equipment types and site conditions
- typical worksite issues and challenges.

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Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s where construction of aerial cable supports can be conducted
- aerial support installation equipment currently used in industry
- relevant regulatory and equipment documentation that impacts on aerial cable installation activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards. Refer also to the *Requirements for assessors* in the ICT Information and Communications Technology Training Package Companion Volume Implementation Guide.

Links

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ICTCBL336 Install and cut over metallic conductor cable to access network cabinet

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to install and cut over a new metallic conductor cable to an access network distribution cabinet. The cable types are typically up to 200 pair copper cables in the carrier access network. The cabinet types may be mixed mode bearer cabinets in the access network and cross connect units (CCUs) or pillars.

It applies to lines workers, field officers or technicians working for carriers, contractors or other service providers who install and rearrange copper cables in the carrier network.

Licensing, legislative, regulatory and certification requirements apply to telecommunications systems. Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Information and Communications Technology Training Package Companion Volume Implementation Guide or the relevant regulator for specific guidance on requirements.

Unit Sector

Telecommunications – Cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for installation	1.1 Obtain project plan to scope work and gain approval from customer on key features of installation 1.2 Arrange access to site according to required enterprise procedure 1.3 Inspect site to develop work health and safety (WHS) plan and notify appropriate personnel of identified safety hazards

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Determine cable route and type of network cable equipment from project plan, considering the location of other services 1.5 Obtain required plant, tools, safety equipment and materials for cabinet entry 1.6 Coordinate with other parties to minimise disruption to services and down time 1.7 Segregate incoming and outgoing cables to facilitate access and avoid overlaying and backtracking of cable 1.8 Notify stakeholders of proposed cut over details and proposed disruption to services 1.9 Undertake additional preparatory non-jointing work, as required, according to customer practices and site conditions
2. Install required cable and termination modules	2.1 Evaluate existing termination module type and capacity 2.2 Install additional termination modules, as required, and modify existing housing capacity according to manufacturer specifications and industry practice 2.3 Determine cable route between parent jointing chamber and cable termination blocks according to customer practices, site limitations, equipment specifications and regulations 2.4 Select entry port and sealing arrangements 2.5 Install cable to cabinet 2.6 Arrange and distribute cable fan out and routing according to industry practice 2.7 Label cabinets, cables and joints according to industry standards
3. Joint, jumper and cut over cable	3.1 Joint cable according to jointing standards, materials, joint type, location, customer practices and manufacturer guidelines 3.2 Install jumpers and cut away tails according to industry practice and to minimise service outages 3.3 Test cable for performance and rectify faults relating to cut over according to location, materials available and industry practice 3.4 Seal all joints and cabinet according to cable type, location, customer practices and manufacturer guidelines
4. Perform tests	4.1 Visually check that all connections and interconnections are firm and sound 4.2 Electrically test all terminations for continuity according to customer practices

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ELEMENT	PERFORMANCE CRITERIA
	4.3 Reseal and pressurise cables
5. Complete site restoration and project documentation	5.1 Supply test results to customer for future reference 5.2 Complete cut over report and design amendments report that shows final cable layout as part of as-built documentation 5.3 Recover obsolete materials and return to appropriate point for disposal 5.4 Restore site according to customer practices or approving authority requirements 5.5 Notify appropriate personnel about completion of cut over and obtain sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Interprets plans, specifications and other documentation from various sources • Consolidates information to determine requirements
Writing	• Documents outcomes and changes to plans using industry relevant terminology and recognised plan symbols • Prepares documentation and correspondence using clear language and correct spelling
Oral Communication	• Interacts effectively in verbal exchanges using appropriate language, listening and questioning skills to convey and clarify information
Numeracy	• Makes calculations required for measuring and estimating materials for construction • Performs mathematical calculations to check, interpret and confirm results of system tests
Navigate the world of work	• Complies with policies, procedures and legislative requirements relevant to own role
Interact with others	• Uses appropriate practices and protocols to communicate effectively with co-workers, customers and others
Get the work done	• Plans, sequences and carries out tasks according to meet required outcomes

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Skill	Description
	• Analyses task requirements to select appropriate equipment and practices • Uses problem solving processes and standard procedures to determine solutions to less predictable problems

Unit Mapping Information

ICTCBL336 Install and cut over metallic conductor cable to access network cabinet supersedes and is equivalent to ICTCBL318 Install and cut over metallic conductor cable to access network cabinet.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL336 Install and cut over metallic conductor cable to access network cabinet

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- interpret project plan to determine cable route, required plant, tools, safety equipment and materials
- communicate with other stakeholders to arrange site access and to confirm safety requirements
- prepare cabinet and cable for cable entry according to customer practices
- install cable, label and fan out for termination
- terminate pairs to termination modules following customer practices
- run jumpers and cut over services with minimum outages
- complete required documentation related to cut over
- follow and comply with WHS and environmental requirements.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- cabling types, connectors and cabling structures
- legislation, regulations, codes, standards and other formal agreements that impact on the work activity, in particular:
  - health, safety and environmental requirements relating to the activity and site conditions
- manufacturer requirements for the operation of jointing equipment
- process for the cut over of a cabinet entry cable

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- features and operating conditions of test equipment and how the equipment is used to measure cable performance
- typical worksite issues and challenges that may cause delays in project construction activities, and how these could be addressed
- purpose of warranties and service level agreements (SLAs).
-

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- systems and equipment used for cut over
- installation equipment currently used in industry
- regulatory and equipment documentation that impacts on work activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCLD301 Evaluate characteristics of cloud computing solutions and services

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to undertake a basic review and analysis of cloud computing delivery and deployment models to support the needs of a business.

The unit applies to individuals engaged in the basic review of a cloud computing solutions for a business or enterprise.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Cloud computing

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to review cloud technology solutions and services	1.1 Identify data handling organisational policies and procedures required for cloud computing solutions and services 1.2 Identify cloud computing solutions and services according to organisational needs 1.3 Identify and confirm business and industry technology terminology, characteristics and concepts 1.4 Identify organisational roles affected by implementation of cloud services and solutions and their impact on cloud computing solutions and services 1.5 Identify requirements to transferring to cloud computing solutions and services according to organisational policies

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	and procedures
2. Review cloud delivery and deployment models	2.1 Identify and review capability and characteristics of different cloud service platforms and delivery models against business requirements 2.2 Research and identify emerging cloud deployment models 2.3 Discuss differences, advantages and disadvantages between cloud cost models and different hybrid deployment models 2.4 Identify the most suitable cloud service and delivery platform according to organisational needs
3. Finalise evaluation	3.1 Identify and document benefits of adopting best cloud solutions and services according to business needs 3.2 Identify and document challenges of adopting cloud solutions and services according to business needs 3.3 Finalise cloud solutions and services evaluation and seek and respond to evaluation feedback according to organisational policies and procedures 3.4 Communicate outcomes of evaluation to required personnel 3.5 Save and lodge evaluation document to required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	**DESCRIPTION**
Reading	• Analyses and consolidates information and data from a range of sources against defined criteria and requirements, and checks for accuracy and completeness
Writing	• Records required information and prepares documentation outlining findings and analysis succinctly
Oral communications	• Obtains and responds to information and feedback from required personnel using succinct verbal language
Learning	• Identifies ideas for other applications and considers them in current contexts
Planning and organising	• Plans and implements routine tasks and workload, making limited decisions on sequencing, timing and collaboration, and seeks assistance in setting priorities
Self-management skills	• Makes low-impact decisions within familiar situations, based on a range of predefined or routine solutions and evaluates effectiveness of outcome

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Unit Mapping Information

Supersedes and is equivalent to ICTNWK306 Evaluate characteristics of cloud computing solutions and services.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCLD301 Evaluate characteristics of cloud computing solutions and services

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, and to:

- determine at least one suitable cloud computing solution and associated services according to business needs.

In the course of the above, the candidate must:

- collate information on the business' need for cloud technology
- articulate total cost of ownership for cloud computing solution as it applies to business needs
- document finalised evaluation findings.

Knowledge Evidence

The candidate must demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit. This includes knowledge of:

- technology trends in cloud computing
- industry technology standards used in cloud computing solutions and services
- functions and features of cloud computing solutions and services vendor products
- principles and functions of cloud computing solutions, models and technologies, including:
  - Infrastructure as a Service (IaaS)
  - Platforms as a Service (PaaS)
  - Software as a Service (SaaS)
- industry standard hardware and software products, their general features, capabilities and application
- different cost models and cloud economic theories as they apply to different cloud services, and benefits to each
- uses and different features of private, hybrid and public cloud deployment models.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- organisational and industry standards, guidelines and legislation required to inform business cloud computing requirements
- information and data sources
- industry standard information and telecommunications equipment required to capture and store data
- a variety of cloud solutions and services and their specifications

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCLD401 Configure cloud services

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to configure core cloud services including compute, storage, databases and autoscaling according to business needs and workload.

The unit applies to cloud computing architects, developers and cloud engineers utilising cloud services and those engaged in deploying cloud computing solutions for a business.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Cloud computing

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Select and secure access to cloud environment	1.1 Discuss and compare different cloud computing solutions, models and services according to business requirements and needs 1.2 Identify impact of shared security responsibility models 1.3 Select best cloud computing solution and service according to business requirements and needs 1.4 Access account on cloud platform according to business requirements and needs 1.5 Identify user access protocols and policies according to business requirements and needs 1.6 Configure access functions within cloud environment

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ELEMENT	PERFORMANCE CRITERIA
	according to users, groups and required permissions 1.7 Identify and assign security responsibilities according to security policies, business protocols and work function 1.8 Define workload according to business requirements and needs
2. Deploy virtual network	2.1 Create users and groups to create and manage infrastructure according to business requirements and needs 2.2 Create virtual multi-tier network to support core services and autoscaling 2.3 Create virtual machine according to business processing and operating system requirements 2.4 Define, add and expand storage on virtual machine according to business requirements and needs 2.5 Deploy a managed database within virtual network according to business requirements and needs 2.6 Test external network access and access between resources within virtual network and fix errors
3. Set up automatic scaling	3.1 Configure and apply autoscaling to virtual machines to scale according to business defined metrics 3.2 Test automatic scaling and fix errors as required
4. Finalise virtual network infrastructure	4.1 Document and communicate work to required personnel 4.2 Seek and respond to feedback as required 4.3 Save and store user documentation according to organisational policies and procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Analyses and consolidates information and data from a range of sources against defined criteria and requirements, and checks for accuracy and completeness
Writing	• Records required information and prepares documentation outlining work performed using appropriate language
Learning	• Identifies ideas for other applications and considers them in current contexts

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SKILL	DESCRIPTION
Planning and organising	• Plans and implements routine tasks and workload, making limited decisions on sequencing, timing and collaboration, and seeks assistance in setting priorities
Self-management skills	• Makes low-impact decisions within familiar situations, based on a range of predefined or routine solutions, and evaluates effectiveness of outcome

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCLD401 Configure cloud services

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, and to:

- build at least one simple virtual network capable of supporting a workload using cloud services
- configure compute, storage, database and autoscaling resources within virtual network
- conduct simple tests to confirm access to resources.

Knowledge Evidence

The candidate must demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit. This includes knowledge of:

- industry technology standards used in cloud computing solutions and services
- industry standard hardware and software products, their general features, capabilities and application, including storage technology
- principles and functions of cloud computing solutions and technologies, including:
  - Infrastructure as a Service (IaaS)
  - Platforms as a Service (PaaS)
  - Software as a Service (SaaS)
- different cost models and cloud economic theories as they apply to different cloud services and non-cloud services, and benefits to each
- functions, features and uses of different virtual machine, networking and scaling options, including:
  - virtual machine sizing including CPU, memory, storage and network bandwidth
  - load balancing and autoscaling
  - performance monitoring and alarms
  - storage backups and lifecycle
  - virtual networks and traffic routing
- functions, benefits and differences of:

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    - vertical and horizontal scaling
    - virtual and physical machines
    - relational, data warehouse and no SQL databases
    - self-hosted, managed and cloud-native database solutions
    - storage options including:
        - block storage
        - object storage
        - archive storage
        - network filesystems
- user, business and vendor responsibilities according to shared security responsibility models
- user access protocols and policies according to organisation hierarchy and job function
- security policies, protocols and mechanisms as they relate to cloud technologies and methodologies including:
    - securities as it applies to limiting network traffic within virtual networks
    - security responsibilities as it applies to different work functions and user access
- purpose of domain name system (DNS) required to connect remote servers when web browsing
- functions, uses and differences of cloud models, including:
    - on-premise and private cloud
    - hybrid cloud
    - public cloud.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- cloud vendor service provider
- cloud managed database service
- internet and web browser
- data to gather information from to determine output and user requirements, including user access and business protocols.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNe - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCLD501 Develop cloud disaster recovery plans

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to develop a cloud disaster recovery plan. It involves identifying current and potential risk factors, including impact, likelihood, duration and cost of disruption in the cloud computing environment.

The unit applies to Chief Information Officers (CIOs), cloud architects, cloud network engineers, cloud consultants and those involved in cloud disaster recovery plans for a business.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Cloud computing

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to develop plan	1.1 Identify disaster recovery plan requirements according to business needs and requirements 1.2 Determine existing organisational recovery plans 1.3 Identify vendor disaster recovery plan and service level agreements
2. Conduct impact analysis	2.1 Determine time and recovery point objectives according to business needs 2.2 Assess potential risks plan exclusions according to business requirements 2.3 Estimate amount of data and security level of data managed

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ELEMENTS	PERFORMANCE CRITERIA
	2.4 Evaluate severity of impact and disruption of risk events 2.5 Document outcomes of impact analysis according to organisational policies and procedures
3. Develop disaster recovery solutions	3.1 Develop range of disaster recovery solutions according to business requirements 3.2 Determine vendor protections and prioritise risks 3.3 Assess external insurance protection levels and their suitability requirements 3.4 Identify other disaster recovery solution components
4. Finalise disaster recovery plan	4.1 Align disaster recovery risk potential according to business requirements 4.2 Outline steps of disaster recovery plan including timelines, key features, service providers and any other aspect 4.3 Document disaster recovery plan according to business needs and requirements
5. Test cloud disaster recovery plan	5.1 Conduct verbal walkthrough of cloud disaster recovery plan with required personnel 5.2 Seek and respond to feedback as required 5.3 Lodge cloud disaster recovery plan according to organisation and legislative protocol 5.4 Obtain final sign off from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Interprets complex technical and operational documentation to determine and confirm job requirements
Oral communication	• Uses listening and questioning techniques to articulate complex concepts and requirements using industry language in cloud computing and risk environment
Self-management	• Demonstrates a sophisticated knowledge of principles, concepts, language and practices associated with the cloud and digital world and uses them to troubleshoot and understand the uses and potential of new technology
Planning and	• Uses a broad range of strategies to evaluate and resolve risk events in cloud and technical environment and demonstrates the knowledge that

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SKILL	DESCRIPTION
organising	design choices will influence the security of virtually stored information
Problem solving	• Uses a mix of intuitive and formal processes to identify key information and issues, evaluate alternative strategies, anticipate consequences and consider implementation issues and contingencies • Uses knowledge of context to address common threats in the cloud and technical environment

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCLD501 Develop cloud disaster recovery plans

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, and to:

- develop and evaluate a cloud disaster recovery plan that includes at least three major risk events.

In the course of the above, the candidate must:

- determine likelihood and impact of risk event to assist in the development of one cloud disaster recovery plan
- document disaster recovery plan and ways the plan reaches Recovery Time Objective (RTO) and Recovery Point Objective (RPO) targets.

Knowledge Evidence

The candidate must demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit. This includes knowledge of:

- risk environments in cloud/ICT environment
- data analysis methodologies to determine risk environment
- disaster recovery techniques applicable to cloud environments
- ISO270001, ISO27002 and ISO 27031 standards
- Recovery Time Objective (RTO) and Recovery Point Objective (RPO) standards and techniques
- techniques and methods to monitor and create alerts in cloud environments.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

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- data required to assess current and future risk events in specified environment
- legislation applicable to risk type
- reporting standards for documenting and communicating disaster recovery plan.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCLD502 Design and implement highly-available cloud infrastructure

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to design and implement fault tolerant and scalable workloads to achieve high availability in a cloud environment.

The unit applies to cloud computing architects, cloud developers, cloud engineers and those engaged in designing and implementing cloud computing solutions for a business. It applies to individuals in Information Communications Technology (ICT) professions involved in systems design and systems architecture.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Cloud computing

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify high-availability requirements	1.1 Determine reliability, recoverability and service levels required for application 1.2 Determine cloud infrastructure according to business needs 1.3 Identify level of shared security responsibility models according to business needs
2. Evaluate architecture availability	2.1 Review architecture of traditional multi-tier web application in non-cloud environment and identify high availability requirements 2.2 Identify any single points of failure

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ELEMENTS	PERFORMANCE CRITERIA
	2.3 Estimate recovery objectives for multi-tier web components and for overall architecture 2.4 Determine components that must scale vertically and the potential impact on system availability 2.5 Document architecture review findings according to business needs
3. Design cloud-based architecture for high availability	3.1 Design equivalent architecture for high availability using cloud services 3.2 Identify and remove single points of failure as required 3.3 Estimate recovery objectives for each component and overall architecture 3.4 Determine components that must scale vertically and the potential impact on system availability 3.5 Document architecture design according to business needs
4. Implement cloud-based architecture for high availability	4.1 Implement architecture design in cloud environment 4.2 Demonstrate connectivity between resources at all tiers 4.3 Monitor and measure availability of resources 4.4 Simulate failures of component and confirm that infrastructure is fault tolerant 4.5 Simulate resizing components likely to impact performance and measure availability impact 4.6 Compare and document simulation findings according to documented design
5. Finalise cloud infrastructure	5.1 Adjust and improve availability of architecture according to simulations as required 5.2 Confirm, seek and respond to feedback with required personnel 5.3 Obtain final sign off from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Oral communication	• Uses listening and questioning techniques to articulate complex concepts and requirements using industry language for intended audience

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SKILL	DESCRIPTION
Reading	• Interprets complex technical and operational documentation to determine and confirm job requirements
Problem solving	• Uses a mix of intuitive and formal processes to identify key information and issues, evaluates alternative strategies, anticipates consequences and considers implementation issues and contingencies • Uses knowledge of context to address common problems in cloud computing applications and cloud-based environments
Self-management	• Demonstrates a sophisticated knowledge of principles, concepts, language and practices associated with cloud computing and the digital world and uses them to troubleshoot and understand the uses and potential of new technology

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCLD502 Design and implement highly-available cloud infrastructure

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, and to:

- design and implement at least one fault tolerant cloud infrastructure on a cloud platform resilient to networking, compute, storage, database and data centre failures
- design and deploy automated infrastructure scaling for at least one business need
- simulate failures of at least one component and demonstrate is fault tolerant.

In the course of the above, the candidate must:

- use cloud management console, software development kits or command line tools
- define, monitor and record resource availability in cloud environment, including:
  - reliability
  - recoverability
  - service levels
  - scalability.

Knowledge Evidence

The candidate must demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit. This includes knowledge of:

- industry technology standards used in cloud computing solutions and services
- current industry standard hardware and software products, their general features, capabilities and application, including storage technology
- different cloud cost models as they relate to scalability of cloud infrastructure
- definitions, functions, features and uses of different cloud infrastructure resources as they apply in cloud architecture to high availability, including:
  - fault tolerance and single points of failure

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  - reliability as defined by mean time to failure (MTTF), to repair (MTTR) and between failures (MTBF)
  - recoverability as measured by recovery time (RTO) and recovery point (RPO) objectives
  - service level agreements (SLAs)
  - vertical and horizontal scalability
- testing and debugging techniques, including techniques to avoid single point failures
- tools and techniques to measure availability impact
- features of cloud services, including differences between built-in fault tolerance and infrastructure designed for fault tolerance
- purpose and features of load balancing and autoscaling as related to improve availability within cloud environment
- techniques, methods and industry standard metrics used to monitor performance of cloud resources.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- cloud vendor service provider
- cloud managed database service
- information and data sources required to design and implement cloud infrastructure
- integrated development environment (IDE)
- specific requirements and industry standards, organisational procedures and legislative requirements, including business and functionality requirements, as required
- internet and web browser
- secure shell (SSH) or remote desktop protocol (RDP) client to connect to cloud-hosted instances
- data to gather information from to determine output and user requirements, including user access and business protocols.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCLD503 Implement web-scale cloud infrastructure

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to design and deploy cloud infrastructure to support highly-scalable web applications.

The unit applies to cloud computing architects, cloud developers, cloud engineers and those engaged in designing and implementing cloud computing solutions for a business.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Cloud computing

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Design scalable web-application cloud infrastructure	1.1 Determine and confirm cloud web-scaling needs 1.2 Review architecture for web application according to business needs 1.3 Identify cloud services required to scale web application 1.4 Design architecture changes using cloud services and check design scales network, compute and storage as utilisation increases 1.5 Determine architecture changes to scale for a global user base 1.6 Check availability and security of application is maintained with design changes and review design as required

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ELEMENTS	PERFORMANCE CRITERIA
	1.7 Document and justify architecture changes
2. Design scalable microservice architecture for a simple application	2.1 Identify microservices and data transactions required to meet business needs 2.2 Determine cloud services to support microservice architecture 2.3 Design microservice architecture using cloud services 2.4 Document and justify architecture design
3. Implement scalable microservice using cloud services	3.1 Review microservice design and code components for application 3.2 Deploy and configure cloud services to implement the application 3.3 Test microservice components and confirm that the application is functioning 3.4 Troubleshooting and fix errors as required
4. Finalise cloud infrastructure	4.1 Set up metrics and trigger scaling alarms according to design specifications 4.2 Confirm, seek and respond to feedback with required personnel 4.3 Obtain final sign off from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Interprets complex technical and operational documentation to determine and confirm job requirements
Writing	• Develops complex documentation in required formats using clear and detailed language to convey explicit information, requirements and recommendations • Writes and edits code, and technical data in a logical manner using required syntax and ensuring flow
Problem solving	• Uses a mix of intuitive and formal processes to identify key information and issues, evaluates alternative strategies, anticipates consequences and considers implementation issues and contingencies • Uses knowledge of context to address common problems in cloud computing applications and cloud-based environments

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SKILL	DESCRIPTION
Self-management	• Demonstrates a sophisticated knowledge of principles, concepts, language and practices associated with cloud computing and the digital world and uses them to troubleshoot and understand the uses and potential of new technology

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCLD503 Implement web-scale cloud infrastructure

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, and to:

- design at least one architecture that will scale networking, compute and storage for a multi-tier web application
- design at least one microservice architecture for implementing a simple web application
- deploy a microservice application utilising cloud serverless technologies.

In the course of the above, the candidate must:

- use cloud management consoles, software development kits or command line tools
- apply web-scaling principles and technologies.

Knowledge Evidence

The candidate must demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit. This includes knowledge of:

- industry technology standards used in cloud computing solutions and services
- industry standard hardware and software products, their general features, capabilities and application, including storage technology
- functions, benefits and differences of web-scale cloud components, including:
  - structured query language (SQL) and NoSQL databases
  - monolithic and microservice architectures
  - virtual, container and serverless compute models
  - content delivery networks and in-memory data stores
- definitions, functions, features and uses of web-scale cloud infrastructure, including:
  - highly cohesive and loosely coupled systems
  - database and storage services for persistent data storage
  - application program interface (API), messaging and queuing services

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- testing and debugging techniques
- web-scaling principles and technologies.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- cloud vendor service provider
- cloud managed database service
- cloud serverless environment
- pre-prepared code elements for microservice deployment
- information and data sources required to design and implement cloud infrastructure
- integrated development environment (IDE)
- specific requirements and industry standards, organisational procedures and legislative requirements, including business and functionality requirements, as required
- internet and web browser
- data to gather information from to determine output and user requirements, including user access and business protocols.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCLD504 Improve cloud-based infrastructure

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to assess, design, improve and monitor cloud architecture on a cloud platform, including security, reliability, scalability and cost optimisation impacts for a business.

The unit applies to cloud computing architects, cloud developers, cloud engineers and those engaged in gathering requirements, designing and implementing cloud computing solutions for a business.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Cloud computing

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Analyse cloud architecture on a cloud platform	1.1 Identify and review business's cloud architecture design 1.2 Evaluate cloud architecture and identify business impact of design decisions 1.3 Identify design patterns and architectural options 1.4 Determine and assess benefits and differences of cloud computing and architectural design against current business model and needs 1.5 Confirm system design decisions according to business needs 1.6 Set business goals as they relate to security, reliability, high-performance and cost efficiencies of cloud architecture

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ELEMENTS	PERFORMANCE CRITERIA
	according to business requirements and needs
2. Design and improve architecture on a cloud platform	2.1 Evaluate and confirm performance metrics for business applications according to business needs 2.2 Select and improve compute, storage, database and network resources according to business needs 2.3 Review and improve architecture required to enhance security, reliability, scalability and cost optimisation 2.4 Document and present proposed architecture for review to required personnel 2.5 Obtain sign off to proceed to deployment with required personnel
3. Deploy, monitor and test architecture on cloud platform	3.1 Deploy approved architecture on cloud platform 3.2 Monitor and measure architecture against performance metrics and business goals 3.3 Test and demonstrate security, reliability, scalability and cost optimisation of deployed resources 3.4 Apply short-term refinements to deployed resources according to test results
4. Finalise improvements on a cloud platform	4.1 Document as-deployed architecture and test results, and highlight changes and improvements from approved design 4.2 Describe long-term improvement strategies and their benefits as applied to deployed resources 4.3 Obtain final sign off from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Oral communication	• Uses listening and questioning techniques to confirm requirements and articulate complex concepts • Presents proposed solutions to required personnel using appropriate industry language
Reading	• Interprets complex technical and operational documentation to determine and confirm job requirements
Writing	• Writes and edits code and technical data in a logical manner using required syntax and language

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SKILL	DESCRIPTION
Problem solving	• Uses a mix of intuitive and formal processes to identify key information and issues, evaluates alternative strategies, anticipates consequences and considers implementation issues and contingencies • Uses knowledge of context to address common problems in cloud computing applications and cloud-based environments
Self-management	• Demonstrates a sophisticated knowledge of principles, concepts, language and practices associated with cloud computing and the digital world and uses them to troubleshoot and understand the uses and potential of new technology

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCLD504 Improve cloud-based infrastructure

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, and to:

- assess, identify and improve cloud architecture on a cloud platform, according to design decisions
- deploy, test and measure at least one architecture design, against architecture principles, metrics and business goals.

In the course of the above, the candidate must:

- determine performance metrics and business goals
- use cloud management consoles, software development kits or command line tools
- create documentation of deployment and testing steps.

Knowledge Evidence

The candidate must demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit. This includes knowledge of:

- industry technology standards used in cloud computing solutions and services
- industry standard hardware and software products, their general features, capabilities and application
- methods and impacts of cloud adoption as they relate to IT system changes
- design principles for cloud applications
- migrating principles for cloud applications
- use of object storage for static web sites
- testing and debugging techniques, including techniques to avoid single point failures
- tools and uses of security layers and security-focused content within cloud services
- features of cloud services, including techniques to improve security, reliability, scalability and costs

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- techniques, methods and industry standard metrics and business goals used to monitor performance of cloud resources.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- cloud vendor service provider
- cloud managed database service
- cloud management console, software development kit or command line tools
- integrated development environment (IDE)
- specific requirements and industry standards, organisational procedures and legislative requirements, including business and functionality requirements, as required
- internet and web browser
- secure shell (SSH) or remote desktop protocol (RDP) client to connect to cloud-hosted instances.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCLD505 Implement cloud infrastructure with code

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to create and implement cloud infrastructure as code using cloud platform templates. This includes creating templates, then using the templates to create and update cloud infrastructure.

The unit applies to cloud engineers, cloud systems administrators and those who work within cloud computing operations to program, implement and maintain cloud computing solutions for a business.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Cloud computing

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to update cloud infrastructure as code	1.1 Identify and review benefits of infrastructure as code according to business needs 1.2 Determine ways automation leverages cloud platforms according to business needs 1.3 Determine and assess potential issues and errors when implementing infrastructure as code 1.4 Evaluate and select infrastructure as code service compatible with selected cloud platform and business requirements
2. Deploy cloud infrastructure as code templates	2.1 Learn template syntax of selected cloud infrastructure as code service

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ELEMENTS	PERFORMANCE CRITERIA
	2.2 Review pre-defined templates and determine what resources they create and any dependencies 2.3 Utilise the cloud infrastructure as code service tools to deploy, update and delete resources using predefined templates as required 2.4 Confirm deployments of cloud resources and configure resources using cloud platform console or command line tools 2.5 Remove deployed resources using cloud infrastructure as code tools and delete templates as required 2.6 Test and troubleshoot template errors as required
3. Develop and update infrastructure as code templates	3.1 Learn template syntax of selected cloud infrastructure as code service 3.2 Create and deploy template to provision a set of related cloud resources according to business needs 3.3 Update and redeploy template to modify previously deployed resources and add new resources 3.4 Confirm deployment of cloud resources and configure resources using the cloud platform console or command line tools 3.5 Parameterise and deploy template to reuse configuration with a modified resource configuration 3.6 Remove deployed resources using cloud infrastructure as code tools and delete templates as required 3.7 Test and troubleshoot template errors
4. Finalise cloud infrastructure as code	4.1 Create user documentation including cloud infrastructure as code templates 4.2 Obtain final sign off from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Oral communication	• Uses listening and questioning techniques to confirm requirements and articulate complex concepts and matters using relevant industry for intended audience
Reading	• Interprets complex technical and operational documentation to determine and confirm job requirements

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SKILL	DESCRIPTION
Writing	• Prepares user documentation detailing developed cloud infrastructure in a logical manner using required syntax and language
Problem solving	• Uses a mix of intuitive and formal processes to identify key information and issues, evaluates alternative strategies, anticipates consequences and considers implementation issues and contingencies • Uses knowledge of context to address common problems in cloud computing applications and cloud-based environments
Self-management	• Demonstrates a sophisticated knowledge of principles, concepts, language and practices associated with cloud computing and the digital world and uses them to troubleshoot and understand the uses and potential of new technology

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCLD505 Implement cloud infrastructure with code

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, and to:

- deploy, update and remove cloud infrastructure using cloud platform templates
- create, run and update at least one own template required to deploy and modify cloud infrastructure.

In the course of the above, the candidate must:

- use cloud management console, cloud software development kits or command line tools
- create user documentation.

Knowledge Evidence

The candidate must demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit. This includes knowledge of:

- industry technology standards used in cloud computing solutions and services
- industry standard hardware and software products, their general features, capabilities and application, including storage technology
- benefits of deploying infrastructure as code compared to manual provisioning in a console
- different infrastructure as code services that can be used on a cloud platform
- syntax of selected infrastructure as code service templates
- tooling required to execute cloud infrastructure templates
- testing and debugging techniques, including common issues and errors relating to deploying cloud infrastructure as code
- parameterisation of templates to support configuration and code reuse
- industry standard practices to define infrastructure as code
- uses and methods to create, manage, provision and update cloud resources and templates
- techniques, methods and industry standard metrics used to leverage cloud platform capabilities and deploy and manage templates.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- cloud vendor service provider
- cloud vendor or 3rd party infrastructure as code service
- specific requirements and industry standards, organisational procedures and legislative requirements, including business and functionality requirements, as required
- information and data sources required to design and implement cloud infrastructure
- integrated development environment (IDE)
- internet and web browser
- secure shell (SSH) or remote desktop protocol (RDP) client to connect to cloud-hosted instances
- cloud management console, cloud software development kit or command line tools.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTCLD506 Implement virtual network in cloud environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to design and configure a virtual network according to networking requirements for a multi-tiered application on a cloud platform.

The unit applies to cloud engineers, cloud systems administrators and those who work within cloud computing operations to program, implement and maintain cloud computing solutions to support a business.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Cloud computing

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to design and configure virtual networks	1.1 Gather multi-tier application networking requirements according to business needs 1.2 Identify business and industry requirements for virtual network in cloud environment 1.3 Research and identify available security options for virtual network
2. Design and configure virtual networks	2.1 Design virtual network according to networking and business requirements for a multi-tier application 2.2 Allocate virtual network and subnets for documented IP ranges

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ELEMENTS	PERFORMANCE CRITERIA
	2.3 Enable network gateways and its service as required 2.4 Configure route tables and routing targets as required 2.5 Configure security controls to support test environment 2.6 Check expected network traffic is permitted into, through and out of virtual network 2.7 Collect and monitor network traffic logs and metrics 2.8 Test external connectivity to a resource within virtual network and demonstrate only permitted traffic reaches the resource 2.9 Troubleshoot and fix errors as required
3. Configure virtual network peering	3.1 Establish peering connection between two virtual networks 3.2 Adjust routing tables to direct traffic between both networks 3.3 Demonstrate network connectivity between hosts in each network 3.4 Test and troubleshoot network peering configuration
4. Document virtual networks	4.1 Document work, including a network diagram, and submit to required personnel as required 4.2 Obtain final task sign off from required personnel as required

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Interprets complex technical and operational documentation to determine and confirm job requirements
Writing	• Prepares user documentation detailing work in a logical manner using required syntax and language
Problem solving	• Uses a mix of intuitive and formal processes to identify key information and issues, evaluates alternative strategies, anticipates consequences and considers implementation issues and contingencies • Uses knowledge of context to address common problems in cloud computing applications and cloud-based environments
Self-management	• Demonstrates a sophisticated knowledge of principles, concepts, language and practices associated with cloud computing and the digital world and uses them to troubleshoot and understand the uses and potential of new technology

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Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCLD506 Implement virtual network in cloud environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, and to:

- design and deploy virtual network to support a multi-tier application in a cloud environment
- modify at least one network configuration to peer with another virtual network.

In the course of the above, the candidate must:

- enable security controls and confirm that controls accurately affect network traffic as required
- use cloud management console, cloud software development kits or command line tools
- create user documentation.

Knowledge Evidence

The candidate must demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit. This includes knowledge of:

- industry technology standards used in cloud computing solutions and services
- industry standard hardware and software products, their general features, capabilities and application, including storage technology
- roles and principles of virtual networks in cloud environments
- uses and purpose of routing, routing targets, subnets, networking security controls, virtual private network (VPN) and IP address ranges
- uses of technology to connect to resources within a virtual network, including secure shell (SSH), virtual private network (VPN) and peering
- uses and differences between:
  - public and private subnets
  - networking gateways
  - routing targets

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  - network security controls
- testing and debugging techniques
- methodology and techniques to collect and analyse network traffic metrics and traffic logs.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- cloud vendor service provider
- information and data sources required to design and implement cloud infrastructure
- specific requirements and industry standards, organisational procedures and legislative requirements, including business and functionality requirements, as required
- internet and web browser
- secure shell (SSH) or remote desktop protocol (RDP) client to connect to cloud-hosted instances
- data to gather information from to determine output and user requirements, including user access and business protocols.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTCLD507 Build and deploy resources on cloud platforms

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to configure, deploy and monitor a range of technology resources of core cloud computing service on a cloud platform.

The unit applies to cloud engineers, cloud systems administrators and those who work within cloud computing operations to provision, implement and maintain cloud computing solutions for a business with little guidance or supervision. These ICT professionals may work from designs developed by cloud architects and focus on operational concerns, including automation and maintaining cloud resources.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Cloud computing

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to deploy a cloud resource	1.1 Review and confirm deploying and configuring a cloud resource task according to business needs 1.2 Determine cloud computing technology resources according to business needs 1.3 Identify organisational policies and procedures required for cloud technology resources 1.4 Identify and confirm business purpose, use and plan of different cloud resources according to business needs
2. Deploy and configure the	2.1 Identify interfaces and tools required to perform task that is

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ELEMENTS	PERFORMANCE CRITERIA
cloud resource	repeatable and automatable 2.2 Define steps required to provision resource 2.3 Confirm and document testing required to demonstrate successful completion of task 2.4 Deploy and configure cloud resource 2.5 Configure required monitoring for cloud resource
3. Test the cloud resource	3.1 Execute test plan and demonstrate cloud resource meets task requirements and business need 3.2 Troubleshoot and resolve issues as required
4. Document and finalise task	4.1 Document procedure and results 4.2 Recommend further steps to reduce manual elements of the procedure through automation 4.3 Submit to required personnel 4.4 Communicate outcomes and obtain final task sign off from required personnel as required

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Interprets complex technical and operational documentation to determine and confirm job requirements
Writing	• Prepares and develops complex documentation in required formats using clear succinct and detailed language to convey explicit information, requirements and recommendations • Writes and edits code and technical data in a logical manner using required syntax and language and ensuring flow
Problem solving	• Uses a mix of intuitive and formal processes to identify key information and issues, evaluates alternative strategies, anticipates consequences and considers implementation issues and contingencies • Uses knowledge of context to address common problems in cloud computing applications and cloud-based environments
Self-management	• Demonstrates a sophisticated knowledge of principles, concepts, language and practices associated with cloud computing and the digital world and uses them to troubleshoot and understand the uses and potential of new technology

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Unit Mapping Information

No equivalent unit. New unit.

Links

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Assessment Requirements for ICTCLD507 Build and deploy resources on cloud platforms

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, and to:

- deploy and configure at least 6 of the following different types of cloud resources, including but not limited to
- virtual machines
- container services
- load balancers and autoscaling
- serverless functions
- API gateways
- block or object storage
- managed databases
- DNS
- content delivery networks.

In the course of the above, the candidate must:

- use cloud management console, cloud software development kits or command line tools
- develop and execute test plans and demonstrate successful task completion
- consider procedural improvements to produce repeatable and automated deployments by reducing manual processes.

Knowledge Evidence

The candidate must demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit. This includes knowledge of:

- industry technology standards used in cloud computing solutions and services
- industry standard hardware and software products, their general features, capabilities and applications
- testing and debugging techniques of cloud resources and technologies

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- purpose, benefits and features of cloud-based:
  - virtual machines and containers services
  - API gateways and serverless computing
  - load balancing and autoscaling
  - block and object storage
  - managed databases
  - DNS and content delivery networks
  - resource logging, monitoring and alerting tools
- repeatable and automated provisioning with
- software development kits
- command line tools
- infrastructure as code services.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- cloud vendor service provider
- cloud managed database service
- information and data sources required to design and implement cloud infrastructure
- integrated development environment (IDE)
- specific requirements and industry standards, organisational procedures and legislative requirements, including business and functionality requirements, as required
- internet and web browser
- secure shell (SSH) or remote desktop protocol (RDP) client to connect to cloud-hosted instances
- data to gather information from to determine output and user requirements, including user access and business protocols.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCLD508 Manage infrastructure in cloud environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to configure, monitor, maintain and update resources running in a cloud environment.

It applies to cloud engineers, cloud systems administrators and those who work within cloud computing environments and responsible for the day-to-day running of cloud resources.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Cloud computing

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to manage cloud resources	1.1 Determine complex cloud computing technology resources according to business requirements, needs and cloud environment 1.2 Identify and confirm business purpose, use and plan of different cloud resources according to business needs and efficiencies
2. Inventory and change management of cloud resources	2.1 Identify tagging policy and categorise resources according to business needs 2.2 Update resources according to tagging policy and build and maintain inventory of cloud resources 2.3 Generate report of resources based on category 2.4 Conduct maintenance with resources in specific category

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ELEMENTS	PERFORMANCE CRITERIA
	2.5 Document resource tagging and inventory management according to business needs
3. Audit and change management of cloud resources	3.1 Identify configuration policy for cloud resources according to business needs 3.2 Enable logging of cloud-based events 3.3 Collect and track changes to cloud resource configuration 3.4 Apply configuration policy to resource and alert for non-conformance 3.5 Utilise audit logs and determine details and changes from configuration 3.6 Document cloud audit and change management configuration
4. Monitoring, logging and alarming	4.1 Define capacity limits for cloud resources according to business needs 4.2 Configure metrics and alarm when limits are exceeded 4.3 Capture and store resource and system logs 4.4 Test capacity to trigger alarms and review logs of incident 4.5 Manage capacity of resource to remove alarm 4.6 Document run book for actions according to configured alarm
5. Manage storage lifecycle	5.1 Identify data retention policy according to business needs and cloud resource 5.2 Configure storage to automatically comply with retention policy 5.3 Confirm that retention policy is applied to target storage 5.4 Document storage configuration according to business needs
6. Monitor and track complex cloud resources	6.1 Document mechanisms to automate tasks as required 6.2 Finalise user documentation and submit to required personnel as required

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Analyses and synthesises highly embedded mathematical

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SKILL	DESCRIPTION
	information in a broad range of tasks and texts
Reading	• Organises, evaluates and critiques ideas and information from a range of complex texts
Writing	• Prepares complex documentation detailing analysis, work performed and results using succinct language and logical structure
Planning and organising	• Identifies the key factors that impact on decisions and their outcomes, drawing on experience, competing priorities, and decision-making strategies, where appropriate • Plans strategic priorities and outcomes within a flexible, efficient and effective context, in a diverse environment exposed to competing demands
Self-management	• Develops and implements strategies that confirms that the organisational policies, procedures and regulatory requirements are being met

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCLD508 Manage infrastructure in cloud environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, and to:

- monitor and manage inventory, changes and lifecycle of at least one cloud resource.

In the course of the above, the candidate must:

- use cloud management console, cloud software development kits or command line tools
- collect and analyse cloud and system data and adjust resources accordingly
- summarise ways system operations in cloud environments can be automated to minimise manual intervention.

Knowledge Evidence

The candidate must demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit. This includes knowledge of:

- industry technology standards used in cloud computing solutions and services
- industry standard hardware and software products, their general features, capabilities and applications
- purpose, benefits and features of cloud services that enable:
  - resource inventory and change management
  - performance, capacity and availability monitoring and alerting
  - snapshots and backups
  - user, service and resource permissions
  - access management, monitoring and auditing
  - system patching and update services
  - security mechanisms
- repeatable and automated maintenance of cloud resources with:
  - console-based management services

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- software development kits
- command line tools.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- cloud vendor service provider
- cloud managed database service
- information and data sources required to design and implement cloud infrastructure
- integrated development environment (IDE)
- specific requirements and industry standards, organisational procedures and legislative requirements, including business and functionality requirements as well as retention/lifecycle business policy, as required
- retention/lifecycle policy example as it relates to managing cloud infrastructure
- internet and web browser
- data to gather information from to determine output and user requirements, including user access and business protocols.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCLD601 Develop cloud computing strategies for businesses

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to develop a cloud computing strategy to establish cloud computing services to improve a business.

It applies to those who work in senior management, including strategic business analysts and chief information officers.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Cloud computing

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Analyse existing business ICT system assets	1.1 Review business assets and identify required assets for cloud deployment 1.2 Evaluate each asset's risk tolerance according to business needs
2. Select deployment and delivery model	2.1 Map assets to required cloud deployment models 2.2 Review and select required delivery model for each asset according to business needs 2.3 Document business security risks for business
3. Develop cloud implementation strategy	3.1 Develop a cloud implementation plan, and confirm that deployment and delivery models are in line with business requirements

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ELEMENT	PERFORMANCE CRITERIA
	3.2 Develop costing for technology requirements implementation proposal 3.3 Develop processes for the periodic review of cloud service metrics according to implementation proposal and business need 3.4 Submit documentation to required personnel and seek and respond to feedback

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Numeracy	• Analyses and synthesises highly embedded mathematical information in a broad range of tasks and texts
Reading	• Organises, evaluates and critiques ideas and information from a range of complex texts
Writing	• Prepares complex documentation detailing analysis and recommended cloud computing implementation strategy using succinct language and logical structure
Planning and organising	• Identifies the key factors that impact on decisions and their outcomes, drawing on experience, competing priorities, and decision-making strategies, where appropriate • Plans strategic priorities and outcomes within a flexible, efficient and effective context, in a diverse environment exposed to competing demands
Self-management	• Develops and implements strategies that confirms that the organisational policies, procedures and regulatory requirements are being met
Technology	• Uses digital technologies to manage business operations and actively investigates new technologies, for strategic and operational purposes

Unit Mapping Information

Supersedes and is equivalent to ICTICT814 Develop cloud computing strategies for a business.

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Assessment Requirements for ICTCLD601 Develop cloud computing strategies for businesses

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- analyse and document a cloud computing implementation strategy that meets business needs.

In the course of the above, the candidate must:

- research cloud computing options in the marketplace according to business needs
- analyse the effectiveness of existing cloud computing deployment and delivery models.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- business processes and cloud service sources
- cloud computing concepts, processes and trends
- require business policies and legislation that impact business operations and privacy legislation
- legal, ethical and security issues relating to cloud computing
- organisational change-management theory and methods
- risk tolerance issues for developing cloud computing strategies
- methods of deploying cloud technology strategies
- security issues relevant to a business.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

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- a complex business environment
- required enterprise strategic documentation, including:
  - strategic planning
  - financial documentation
  - ICT infrastructure
  - business objectives and policies.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTCLD602 Manage information security compliance of cloud service deployment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to manage cloud security controls, privacy and legal compliance when implementing cloud services for an enterprise.

It applies to those with managerial responsibility of a business' IT infrastructure, including cloud engineers, systems engineers and experienced security technical specialists, security analysts, security consultants.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Cloud computing

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify information security risks for cloud service	1.1 Identify cloud security risks for different cloud delivery and deployment models 1.2 Identify and review legal, privacy and contractual issues, organisational policies, procedures and requirements 1.3 Map responsibilities between organisation and cloud vendor 1.4 Review compliance controls of cloud vendor 1.5 Identify risks and identify risks that are organisation's responsibility

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ELEMENT	PERFORMANCE CRITERIA
2. Manage cloud security controls	2.1 Identify security controls provided by the cloud vendor for cloud service 2.2 Map security controls to organisation risks 2.3 Configure security controls to mitigate risk according to business needs 2.4 Document configuration of security control and risk mitigation
3. Manage cloud privacy compliance	3.1 Identify required data storage compliance regulations 3.2 Determine data privacy risks associated with cloud service 3.3 Determine and implement business continuity and data recovery plan requirements 3.4 Review user access policies and configuration to data 3.5 Identify, secure and maintain, logs and audit trails according to business requirements 3.6 Document data privacy risk mitigation
4. Implement information security compliance enhancements	4.1 Implement and integrate required changes into organisations risk register and business continuity plans (BCP) 4.2 Establish and document performance measurement program and evaluate security effectiveness of implemented security controls 4.3 Submit documentation changes to required personnel 4.4 Obtain final task sign of from required personnel

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Learning	• Explores and incubates, new and innovative ideas, through unconstrained analysis and critical thinking, to develop and improve the organisation's goals
Oral communication	• Articulates requirements and complex concepts using industry standard technical language intended for audience and environment
Reading	• Organises, evaluates and critiques ideas, and information, from a wide range of complex texts
Writing	• Prepares complex documentation detailing cloud security control and privacy mitigation and recommended enhancements using

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SKILL	DESCRIPTION
	succinct language and logical structure
Planning and organising	• Plans strategic priorities and outcomes within a flexible, efficient and effective context, in a diverse environment, exposed to competing demands • Gathers and analyses data, and seeks feedback to improve plans and processes
Problem solving	• Makes high-impact decisions in a complex and diverse environment, using input from a range of sources • Identifies the key factors that impact on decisions and their outcomes, drawing on experience, competing priorities, and decision- making strategies, where appropriate
Self-management	• Works autonomously making high-level decisions to achieve, and improve, organisational goals • Develops and implements strategies, that confirms that organisational policies, procedures and regulatory requirements are being met
Technology	• Demonstrates a sophisticated knowledge of principles, concepts, language and practices associated with the digital world

Unit Mapping Information

Supersedes and is equivalent to ICTNWK616 Manage security, privacy and compliance of cloud service deployment.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCLD602 Manage information security compliance of cloud service deployment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify, manage and implement cloud security controls and document requirements on at least one occasion.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- business and commercial issues relating cloud security management
- cloud shared security responsibility models
- legislation, organisational and jurisdictional policy and procedures that impact management areas including:
  - data privacy and sovereignty issues
  - codes of ethics and conduct
  - equal employment opportunity, equity and diversity principles
  - financial management requirements
  - governance requirements
- industry standard management tools and techniques suited to a range of complex project activities
- key organisational context, policies and procedures and required to manage information security compliance of cloud service deployment
- information security compliance standards, including ISO2700x
- information security compliance constructs, including risk, controls and risk mitigation.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- cloud information and communications technology (ICT) business specifications
- cloud ICT security assurance specifications
- cloud-focused security environment, including threats to security that are, or are held to be, present in the environment
- security environment information, including:
  - laws or legislation
  - existing enterprise security policies
  - enterprise expertise
- risk analysis tools and methodologies currently used in industry
- documented organisational work health safety (WHS) requirements.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCMP203 Perform restricted customer premises broadband cabling work: ACMA Restricted Rule

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to install simple point-to-point broadband cabling on customer premises.

The unit applies to technical staff who install and terminate new installations or upgrades, or maintain existing networks in domestic premises. These may include small offices, home offices and small commercial premises that do not have a main distribution frame (MDF) or jumperable distributor as the network boundary point.

Licensing, legislative, regulatory and certification requirements apply to telecommunications systems. Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. All customer cabling work in the telecommunications, fire, security and data industries must be performed by a registered cabler. All cablers are required to register with an Australian Communications and Media Authority (ACMA) accredited registrar. Refer to the ICT Information and Communications Technology Training Package Companion Volume Implementation Guide or the relevant regulator for details of licensing, legislative or certification requirements.

Pre-requisite Unit

ICTCBL246 Install, maintain and modify customer premises communications cabling: ACMA Restricted Rule

OR

ICTCBL239 Install customer cable support systems

and ICTCBL240 Place and secure customer cable

and ICTCBL241 Terminate metallic conductor customer cable

and ICTCMP201 Organise and monitor cabling to ensure compliance with regulatory and industry standards

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Unit Sector

Telecommunications – Compliance

Elements and Performance Criteria

Element	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for installation	1.1 Access site according to enterprise procedures 1.2 Organise tools and equipment for specialised broadband cabling for restricted cabling work 1.3 Review site according to work health and safety (WHS) and environmental requirements and identify hazards 14 Determine cable route and cabling environment meet manufacturer specifications, industry standards and regulatory requirements
2. Install broadband cable	2.1 Place and secure correct cable type according to accepted industry practice, relevant regulations and standards 2.2 Maintain cable and service separations in runs and crossovers to meet manufacturer specifications and relevant legislation, regulations, codes and standards 2.3 Fit over-voltage protection devices to cables and metallic components as required
3. Terminate and test broadband cable	3.1 Terminate cable according to accepted industry practice and relevant legislation, regulations, codes and standards 3.2 Maintain correct twist ratio to optimise system performance at rated level 3.3 Conduct verification and qualification testing of cable installation and termination with suitable tester and record results 3.4 Supply system performance documents to customer and outline results 3.5 Complete cabling records and telecommunications cabling advice forms (TCA1) according to industry standards

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

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Skill	Description
Reading	• Evaluates information and products from a variety of sources to ensure appropriateness to customer needs and specifications
Writing	• Prepares documentation and correspondence using clear language, correct spelling and accurate terminology
Numeracy	• Makes calculations appropriate for measuring and estimating materials for installations
Navigate the world of work	• Understands rights and responsibilities and complies with legal and regulatory requirements
Get the work done	• Plans and implements routine tasks and workload making limited decisions on sequencing, timing and collaboration, seeking assistance in setting priorities • Responds to predictable routine problems and implements solutions • Makes decisions within familiar situations, based on a range of predefined or routine solutions

Unit Mapping Information

ICTCMP203 Perform restricted customer premises broadband cabling work: ACMA Restricted Rule supersedes and is equivalent to ICTCMP202 Perform restricted customer premises broadband cabling work: ACMA Restricted Rule.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCMP203 Perform restricted customer premises broadband cabling work: ACMA Restricted Rule

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- review site and determine cable requirements for installation
- comply with all related work health and safety (WHS) requirements and work practices
- install and terminate fixed broadband cable according to industry standards and manufacturer specifications
- terminate point-to-point data and cable
- verify installed network is working and able to access the internet
- perform a data rate qualification test and record test results
- provide report to customer, documenting installation and test results, according to industry standards.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- legislation, regulations, codes, standards, rules, guidance notes and other formal agreements that impact on work, in particular:
  - Australian Communications and Media Authority (ACMA) cabling provider rules, cabler registration rules, regulations and standards
  - hazards and work health and safety (WHS) regulations and environmental requirements relating to cabling activities and site conditions
- types of cable test methods and system performance requirements
- types of cabling situations and the resultant installation requirements

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- features and operating requirements of applicable test equipment
- information required to operate equipment according to a test specification
- manufacturer requirements for safe operation of equipment
- techniques for terminating data cable
- typical installation issues and challenges that may occur on cabling worksites
- tools and equipment required for cabling works
- cable separations and over-voltage protection requirements necessary for specific cable installations.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s where installation and termination of cabling can be conducted
- current tools, testing equipment and personal protective equipment used in industry
- relevant regulatory and equipment documentation that impact installation activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards. Refer also to the *Requirements for assessors* in the ICT Information and Communications Technology Training Package Companion Volume Implementation Guide.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCYS401 Design and implement network security infrastructure for an organisation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to set up network security infrastructure scalable to a medium to large organisation.

It applies to individuals who work as networking engineers and cloud engineers and specialise in cyber security in an Information and Communications Technology (ICT) and digital team environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Cyber security

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to design and implement network security infrastructure	1.1 Obtain work details and scope from required personnel and arrange for site access in compliance with required security arrangements, legislation, codes, regulations and standards 1.2 Establish security threats impacting organisation with required personnel and assess its likelihood 1.3 Confirm and document established requirements and risks according to organisational procedures
2. Design network security infrastructure	2.1 Establish requirements and features of network security infrastructure 2.2 Identify and evaluate a range of industry standard network

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ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	security providers 2.3 Discuss and confirm selected network security provider with required personnel according to infrastructure requirements
3. Implement network security infrastructure	3.1 Establish and create secure network boundaries 3.2 Implement server, application and user security technologies according to network security requirements 3.3 Confirm required levels of user access throughout organisation 3.4 Establish maintenance and alert processes for risk and security threats according to organisational procedures
4. Finalise and monitor network security infrastructure	4.1 Test deployment of network security infrastructure and its components according to organisational testing procedures 4.2 Gather and review test results and logs and adjust accordingly 4.3 Confirm completion of requirements with required personnel 4.4 Document work performed and results according to organisational procedures 4.5 Conduct routine reviews of network security infrastructure according to organisational procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Identifies and gathers information applicable to business, infrastructure and network
Reading	• Selects and applies network infrastructure features and procedures suited to job requirements and system design from range of routine texts
Writing	• Uses required and industry specific terminology in documenting research findings and network security policies
Technology	• Uses required technological tools and software in designing and implementing network security infrastructure • Applies skills in systems administration, network security, applications and programming

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Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCYS401 Design and implement network security infrastructure for an organisation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design and implement a network security infrastructure according to organisational requirements.

In the course of the above, the candidate must:

- identify at least three security risks and at least three threats impacting business
- identify and evaluate the advantages and disadvantages of at least two industry standard network security providers suitable to infrastructure being designed and implemented.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- network infrastructure features, including:
- connectivity
- routing and switching capabilities
- network security
- access control
- organisational business processes and applicable organisational, infrastructure, network and security requirements in each area
- organisational procedures applicable to designing and implementing network security infrastructure, including:
  - documenting established requirements, risks and work performed
  - establishing requirements and features of network security infrastructure
  - establishing maintenance and alert processes
  - conducting routine reviews of network security infrastructure
  - testing methods and procedures

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- security risks, and tolerance of risk in an organisation
- industry standard network security providers
- industry standards and regulations applicable to implementing network security infrastructure in an organisation.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- required hardware, software and its components
- organisational procedures and policies applicable to network security infrastructure
- required network security providers and solutions
- site server
- application and user security technologies.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCYS402 Identify and confirm cyber security incidents

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to identify, confirm and report cyber security incidents in an organisation.

It applies to individuals who work in information technology security, and gather logs from systems, networks and applications to identify the occurrence of incidents in any business environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Cyber security

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify cyber security incidents	1.1 Identify and review legislative requirements and organisational procedures and policies applicable to cyber security incidents and incident response plans 1.2 Obtain and analyse system, network and application infrastructure and logs according to organisational security procedures 1.3 Analyse and test application and confirm assumptions of incidents according to organisational security procedures 1.4 Discuss differences between network and systems incidents with required personnel
2. Confirm cyber	2.1 Confirm whether incidents are network or systems related

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ELEMENT	PERFORMANCE CRITERIA
security incidents	2.2 Discuss and confirm incident with required personnel 2.3 Identify and discuss potential changes required to system, network and application
3. Report and document cyber security incidents	3.1 Report cyber security incident to required personnel, according to legislative requirements and organisational policies and procedures 3.2 Document exposed vulnerability and changes, solutions and actions discussed according to organisational policies and procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Identifies and gathers information applicable to business, systems, network and infrastructure
Oral communication	• Uses effective communication techniques to discuss details of cyber security incidents using industry standard technical language intended for audience and environment
Reading	• Interprets information in a range of formats when identifying cyber security incidents • Reads and applies information of relevance to cyber security incident and suggests potential changes
Writing	• Uses required and industry specific terminology in documenting cyber security incidents and proposed actions and solutions
Technology	• Uses required technological tools and software in identifying and confirming cyber security incidents

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCYS402 Identify and confirm cyber security incidents

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify and confirm occurrence of at least:
  - one network incident
  - one system incident
  - one wireless or Wi-Fi incident
  - one application incident.

In the course of the above, the candidate must:

- discuss and contribute at least one potential change to each incident
- adhere to legislative requirements and organisational security procedures.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- different types of cyber security incidents and attacks, including:
  - security vulnerabilities and malware
  - denial-of-service attack (DDOS)
  - SQL injection (SQLi)
  - cross-site scripting (XSS) attacks
  - scripted attacks
  - hardware attacks
  - attacks against Wi Fi
- cyber security risks
- methods of testing systems, networks and applications and confirming incidents
- common procedures in:

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  - following organisational cyber security incident response plans
  - responding to cyber security incidents
- legislative requirements applicable to identifying and reporting cyber security incidents
- organisational policies and procedures applicable to cyber security incidents, including:
  - documenting established requirements, incidents and work performed
  - security procedures
  - obtaining and analysing system, network and application information
  - cyber security incident response processes and plans
  - establishing reporting procedures.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- required hardware, software and its components
- system, network and application infrastructure and logs
- the internet
- organisational security procedures including incident response plans.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCYS403 Plan and implement information security strategies for an organisation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to develop an information security and risk management strategy (ISRM) within an organisation that supports business processes.

It applies to individuals who work in information technology security and have the knowledge and skills in cyber security to support business functions in planning and implementing information security strategies. In this instance, the individual may work internally within an organisation, or be engaged externally in supporting organisations with their development of information security strategies.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Cyber security

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan information security strategies	1.1 Discuss implementation opportunities for organisational information security strategies with required personnel 1.2 Gain management buy in and approval in planning and implementing information security strategy 1.3 Identify and confirm organisational policies including password policies, bring your own device (BYOD) and on boarding processes with required personnel 1.4 Analyse organisational environments, processes and risk

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ELEMENT	PERFORMANCE CRITERIA
	profile requirements 1.5 Identify legislation and industry requirements to implement information security strategies in an organisation
2. Design and implement information security strategy	2.1 Develop action plan with specific goals and objectives of information security strategy according to organisational needs 2.2 Design secure network infrastructure and security strategy according to organisational needs 2.3 Analyse data classifications and levels of access in operational processes and integrate with strategy 2.4 Document designed information security strategy according to organisational procedures 2.5 Implement information security strategy according to design and organisational needs
3. Test and finalise information security strategy	3.1 Establish security baselines and metrics according to organisational needs 3.2 Perform testing procedures and confirm information security strategy addresses organisational needs 3.3 Record and compare test results to established metrics and benchmarks 3.4 Finalise documentation and report information security strategy outcomes to required personnel 3.5 Obtain feedback from required personnel and amend information security strategy accordingly 3.6 Review final information security strategy and obtain sign-off from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Identifies and gathers information applicable to business, organisational security and environment
Numeracy	• Uses tools when developing security baselines and metrics
Reading	• Selects and applies procedures and strategies required in developing information security strategies after reading required texts
Writing	• Uses required and industry specific terminology in documenting action plans and information security strategies

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SKILL	DESCRIPTION
Teamwork	• Works collaboratively with required personnel and interdisciplinary teams in developing information security strategies
Planning and organising	• Manages development of information security strategies using logical sequencing
Technology	• Uses required technological tools and software in planning and implementing information security strategies • Applies skills in systems administration, network security, applications and programming

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCYS403 Plan and implement information security strategies for an organisation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- plan and implement an information security strategy according to organisational needs.

In the course of the above, the candidate must:

- establish at least three security baselines and at least three testing metrics
- comply with legislation and industry requirements
- follow organisational procedures.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- function of information security strategy testing procedures, including:
  - vulnerability tests
  - basic penetration tests
- key organisational environment and business processes required to plan and implement information security strategies for an organisation
- network and cyber security features and principals
- types of data and classifications including sensitivity levels
- advantages and importance of implementing information security strategies
- organisational procedures applicable to developing information security strategies, including:
  - documentation processes
  - designing secure network infrastructure
  - establishing requirements and features of information security strategies
  - establishing baselines and metrics

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- testing methodologies.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- required hardware, software and its components
- information and documents applicable to organisational procedures and processes
- information security strategy testing software.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCYS404 Run vulnerability assessments for an organisation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to run vulnerability assessments and basic penetration tests to identify potential threats to an organisation. It includes the ability to minimise risk and remediate vulnerabilities to confirm that the security of an organisation is maintained.

It applies to individuals who work as penetration tester and security consultants in any business environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Cyber security

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to run vulnerability assessment	1.1 Obtain work details and scope from required personnel and arrange for site access in compliance with required security arrangements, legislation, codes, regulations and standards 1.2 Discuss and evaluate scanning tools and select according to vulnerability assessment requirements 1.3 Establish testing regime and schedule, and documentation requirements according to organisational needs
2. Run vulnerability assessment and penetration test	2.1 Perform vulnerability assessment according to organisational procedures 2.2 Identify and document vulnerabilities arising from vulnerability

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	assessment according to organisational procedures 2.3 Run a simple penetration test according to organisational procedures 2.4 Identify and document potential threats arising from penetration test according to organisational procedures 2.5 Contribute and develop ideas in addressing vulnerabilities
3. Finalise vulnerability assessment process	3.1 Discuss vulnerabilities identified in vulnerability assessment and penetration testing with required personnel 3.2 Contribute ideas with required personnel and remediate vulnerabilities identified according to organisational procedures 3.3 Escalate unresolved vulnerabilities to required personnel 3.4 Document identified vulnerabilities and work performed according to organisational procedures 3.5 Report to management and confirm vulnerability assessment with required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Identifies and gathers information applicable to business, systems and network
Numeracy	• Measure and record data and interpret testing results using tools
Reading	• Interprets information from a range of sources when establishing vulnerability assessment procedures
Writing	• Prepares documentation detailing vulnerability assessments according to organisational requirements using concise industry specific terminology applicable to cyber security
Planning and organising	• Prepares and manages vulnerability assessment process logically and sequentially
Problem solving	• Uses problem solving skills when interpreting the nature and threat of vulnerabilities identified
Technology	• Uses required technological tools and software in identifying potential threats in an organisation

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Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCYS404 Run vulnerability assessments for an organisation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- perform at least one vulnerability test assessment
- define and run at least one basic penetration test.

In the course of the above, the candidate must:

- assess web based, network based and hardware-based vulnerabilities
- adhere to organisational procedures
- document and report activities.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- security risks and vulnerabilities in software systems
- tools used in testing a network for vulnerabilities including scanning tools
- basic level penetration testing of a system
- methods and tools used to protect data in an organisation
- risk mitigation strategies that may be used running vulnerability assessments for an organisation
- organisational procedures applicable to running vulnerability assessments, including:
  - establishing goals and objectives of vulnerability assessments
  - defining scope of testing and establishment of testing regime
  - documenting established requirements
  - establishing penetration testing procedures
  - documenting findings, threats and work performed

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- key organisational environments, systems and networks required to run vulnerability assessments.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- required software testing packages
- required hardware and its components
- vulnerability scanning tools
- a server
- text-editing software
- information applicable to organisational environment, systems and network
- required organisation network, systems or applications.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCYS405 Develop cyber security incident response plans

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to plan for and develop a response plan for cyber security incidents.

It applies to individuals who work in information technology security, including network and security specialists, and apply a range of cyber security threat skills and knowledge to support all business functions plans for incidents.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Cyber security

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan incident response plans	1.1 Identify and gather information on organisational environment, procedures and processes and cyber security threats 1.2 Discuss and confirm ideas and plans with management and gain approval in developing response plans 1.3 Establish response committee and roles and responsibilities of each individual according to organisational procedures 1.4 Identify required services and assets in developing test plans
2. Develop and confirm incident response plans	2.1 Establish and confirm recovery time objective (RTO) and recovery point objective (RPO) in disaster recovery according to organisational requirements 2.2 Discuss and establish test scenarios

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ELEMENT	PERFORMANCE CRITERIA
	2.3 Establish and confirm test frequency according to organisational requirements 2.4 Develop test baselines and metrics according to organisational procedures 2.5 Confirm and document draft test plans with required personnel and respond to feedback accordingly 2.6 Test cyber security incident response plan according to testing procedures 2.7 Identify, address and report errors noted in testing phase, within scope of own role
3. Finalise incident response plans	3.1 Discuss lessons learnt in testing response plans and adjust test plans accordingly 3.2 Obtain sign-off with required personnel according to organisational policies and procedures 3.3 Record, document and store test plans according to organisational procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Identifies and gathers information applicable to organisational procedures and developing response plans
Numeracy	• Uses tools to measure and record data and interpret test plan results
Reading	• Identifies and analyses information from a broad range of sources in determining required incident response plans suited to an organisation
Writing	• Prepares complex workplace documentation detailing response plans using required structure, layout and technical programming language
Technology	• Uses required technology tools and software in testing cyber security response plans

Unit Mapping Information

No equivalent unit. New unit.

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Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCYS405 Develop cyber security incident response plans

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop a plan in response to cyber security incidents for each of the following areas:
  - organisation’s network
  - organisation’s system
  - Wi-Fi network
  - an application
  - a human error.

In the course of the above, the candidate must:

- establish at least two test scenarios in each plan
- develop at least two test metrics and at least two baselines in each plan
- adhere to organisational procedures.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- features and principals of networking, Wi-Fi networks and applications
- procedures in testing cyber security incident test plans
- metrics and baselines used in cyber security incident test plans
- roles and responsibilities of test committees
- organisational procedures and requirements applicable to developing cyber security incident response plans, including:
  - documenting established requirements and incident response plans
  - establishing response committees
  - testing methodologies

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  - establishing baselines and metrics
- cyber incidents and scenarios.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- software required in testing cyber security incident response plans
- required hardware and its components
- Wi-Fi network
- an application
- text-editing software
- information applicable to organisational environment, processes and previous cyber security incidents.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCYS406 Respond to cyber security incidents

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.
Release 2	Correcting an error in the Knowledge Evidence.

Application

This unit describes the skills and knowledge required to establish and respond to cyber security incidents in an organisation, and evaluate actions performed to mitigate risk of future incidents.

It applies to individuals who work in information technology security, including network specialists and security, to support all business functions responding to cyber incidents. These individuals have a broad range of knowledge and skills in cyber security, networks and systems. In this context, the individual works as an internal function for an organisation, however, the same can be applied in the context of an external security specialist advising and implementing the response and action items of a cyber-attack to an external client.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Cyber security

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish cyber security incident	1.1 Establish and confirm occurrence and nature of cyber security incident 1.2 Identify legislative requirements, organisational policies and procedures and cyber security incident response plans 1.3 Analyse and assess source, impact and consequences of incident according to organisational response plans

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Notify and explain cyber incident to required personnel according to legislative requirements and communications plans
2. Activate cyber security incident response plan	2.1 Activate incident response plan and confirm cyber incident is contained 2.2 Escalate and involve third party services and specialists as required according to organisational policies and procedures 2.3 Confirm no further risks exist according to legislative requirements and organisational response procedures 2.4 Discuss solutions with required personnel and action accordingly 2.5 Test solution implemented, and escalate as required according to organisational security procedures
3. Perform post cyber security incident response procedures	3.1 Evaluate actions taken and confirm incident is fixed and secure according to organisational procedures 3.2 Document cyber security incident, actions performed and solution, according to organisational policies and procedures 3.3 Discuss and document lessons learnt with required personnel 3.4 Discuss and implement preventative measures and mitigation methods as required 3.5 Amend incident response plan accordingly 3.6 Share documentation and communicate with required personnel according to organisational communications plan

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Identifies and gathers information applicable to organisational procedures and incident response procedures
Numeracy	• Measures and records mathematical data and uses tools when interpreting results
Reading	• Identifies and interprets information from incident response plans, and extracts applicable areas when dealing with cyber security incidents

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SKILL	DESCRIPTION
Writing	• Uses required industry specific terminology when documenting cyber security incidents and solutions
Problem solving	• Uses problem solving skills when identifying the nature and impact of cyber security incidents
Technology	• Uses required technological tools and software in responding to cyber security incidents • Applies skills in systems administration, network security, applications and programming

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCYS406 Respond to cyber security incidents

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.
Release 2	Correcting an error in the Knowledge Evidence.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- respond to at least two different cyber security incidents in at least two different business functions
- develop and follow a basic communications plan.

In the course of the above, the candidate must:

- comply with organisational cyber security incident response plan
- adhere to legislative requirements and organisational policies and procedures.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- key features of incident response plans
- cyber security incidents and the source and causes of these incidents
- types of attacks, including:
  - denial-of-service attack (DoS)
  - SQL injection (SQLi)
  - cross-site scripting (XSS) attacks
  - scripted attacks
  - hardware attacks
  - attacks against Wi Fi
- cyber security incident detection methodologies
- preventative measures and mitigation methods applicable to cyber security incidents

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- documentation processes that may be used in the process of responding to cyber security incidents
- organisational policies and procedures applicable to cyber security incident response, including procedures for:
  - determining nature and location of incidents
  - containing incidents, including installation of security patches and disabling network access
  - notifying and reporting to required personnel
  - encryptions
  - assessing impact on business function and other areas
- procedures in developing communications plans.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- organisation cyber security incident response plan
- required hardware and software
- text-editing software
- legislative requirements and organisational procedures and policies applicable to cyber security incident.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCYS407 Gather, analyse and interpret threat data

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to gather data from various sources, analyse, and interpret information for threats, inconsistencies and discrepancies.

It applies to individuals who work in information technology security, including network and security specialists, and gather logs from devices, check abnormalities and respond accordingly. These individuals are responsible for supporting and preventing cyber threats attacking data in all business functions and in any industry context.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Cyber security

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Gather threat data	1.1 Identify legislative requirements and organisational policies and procedures to gather, analyse and interpret threat data 1.2 Identify security equipment on network and data sources 1.3 Discuss and confirm data log requirements and strategy to process data with required personnel 1.4 Collect information from alerts, logs and reported events and create a dataset according to organisational policies and procedures
2. Analyse threat data	2.1 Ingest data logs into analytic platform according to user instructions

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Obtain and analyse results for reliability and consistency 2.3 Check for false positives and false negative results 2.4 Detect and describe discrepancies and inconsistencies in data
3. Interpret and finalise threat data	3.1 Discuss and review threat data and results with required personnel 3.2 Discuss and assess identified threats, risks and their likelihood of occurrence and impacts of risks, 3.3 Suggest and confirm lessons learnt, action steps, recommendations and mitigation strategies with required personnel 3.4 Document results, findings and recommendations into report according to organisational procedures 3.5 Distribute documentation to required personnel and store according to organisational policies and procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Identifies and gathers information applicable to organisational procedures and threat data
Numeracy	• Uses tools when measuring and recording data, and interprets results through mathematical data
Reading	• Interprets information from different sources in a range of formats when identifying threat data
Writing	• Prepares complex workplace documentation detailing research findings and recommendations using required structure, layout and technical language
Planning and organising	• Uses problem solving skills when interpreting the nature and impact of threat data
Technology	• Uses required technological tools and software in gathering, analysing and interpreting threat data

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Unit Mapping Information

No equivalent unit. New unit.

Links

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Assessment Requirements for ICTCYS407 Gather, analyse and interpret threat data

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- gather, log and create dataset from a single security device or whole organisation device, including:
  - basic router info
  - firewall info
  - systems
- identify and describe at least three different inconsistencies or discrepancies within data
- document finding, recommendations and outcomes.

In the course of the above, the candidate must:

- interpret meaning from dataset and suggest action items.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- data recognition software tools
- data sources, including:
  - firewalls
  - intrusion detection systems (IDS)
  - access control systems
  - security and event management systems (SIEM)
- basic troubleshooting processes related to cyber security threats
- network and cyber security features and principals
- types of attacks, including:
  - denial-of-service attack (DDOS)

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    - SQL injection (SQLi)
    - cross-site scripting (XSS) attacks
    - scripted attacks
    - hardware attacks
    - attacks against Wi Fi
- legislative requirements applicable to gathering, analysing and interpreting threat data
- common cyber security threats and their impacts on business functions
- organisational policies and procedures applicable to gathering, analysing and interpreting threat data, including:
    - documentation established requirements, findings and recommendations
    - establishing security equipment and data sources
    - information collection processes
    - processes in obtaining and analysing results.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- required hardware, software and digital devices
- required analytic platform and applicable user instructions
- data recognition software
- single security device and whole organisation device
- legislative requirements and organisational policies and procedures applicable to gathering, analysing and interpreting threat data.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTCYS601 Create cyber security standards for organisations

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.
Release 2	Correcting an error in the Assessment Conditions.

Application

This unit describes the skills and knowledge required to research, plan and implement cyber security standards for an organisation.

It applies to those who work in information technology security in roles including cyber security analysts and specialists, business development managers, cyber risk and assurance managers responsible for creating cyber security standards for an organisation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Cyber security

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine cyber security needs	1.1 Identify and document organisational cyber security needs 1.2 Identify existing organisational cyber security standards framework 1.3 Identify external cyber security standards according to organisational requirements 1.4 Identify core components and implementation tiers of framework according to organisational requirements 1.5 Identify and document cyber security framework profile according to organisational policies and procedures

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2. Create standards framework	2.1 Determine and document objectives of standards framework 2.2 Document standards framework according to organisational and cyber security standards requirements 2.3 Submit documentation to required personnel and respond to required changes
3. Implement cyber security standards	3.1 Distribute cyber security framework to required personnel 3.2 Lodge documentation according to organisational policies and procedures
4. Finalise and monitor cyber security standards	4.1 Analyse organisation's adherence to cyber security standards 4.2 Detect areas of non-compliance and resolve according to organisational requirements 4.3 Analyse recovery strategies according to cyber standards requirements 4.4 Confirm completion of requirements from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Interprets information from technical, manufacturer and organisational documentation to determine and confirm job requirements
Writing	• Prepares complex workplace documentation detailing processes and outcomes using required structure, layout and applicable language
Planning and organising	• Operates from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation, and identifying and addressing issues
Problem solving	• Uses provided context to identify recognise anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise
Self-management	• Uses systematic processes, setting goals, gathering required information and identifying and evaluating options against agreed criteria

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Unit Mapping Information

No equivalent unit. New unit.

Links

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Assessment Requirements for ICTCYS601 Create cyber security standards for organisations

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.
Release 2	Correcting an error in the Assessment Conditions.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- create, implement and monitor cyber security standards for an organisation on at least one occasion.

In the course of the above, the candidate must:

- document plans and outcomes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- advanced features of network security
- organisational business processes applicable to creating cyber security standards including:
  - documenting established standards and requirements
  - establishing requirements and features of network security infrastructure
  - establishing maintenance and alert processes
  - conducting routine reviews of network security infrastructure
  - testing methods and procedures
- security risks, and tolerance of risk in an organisation
- industry standard network security providers
- industry standards and regulations applicable to implementing network security infrastructure in an organisation
- key organisation, infrastructure and network requirements required to create cyber security standards for organisations.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- software and its components related to creating cyber security standards
- standards for Cyber security ISO/IEC 27000 series, Information security management systems standards
- network security providers and solutions required for creating cyber security standards
- application and user security technologies.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCYS602 Implement cyber security operations

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to research, implement and monitor cyber security operations.

It applies to those in cyber security roles including network and server administrators and cyber security architects working in security operations within an organisation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Cyber security

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Assess organisational cyber security operations	1.1 Identify existing organisational cyber security operations 1.2 Identify organisational cyber security requirements 1.3 Analyse effectiveness of organisations existing cyber operations against organisational requirements 1.4 Document findings of analysis according to organisational requirements
2. Determine and document organisational operations	2.1 Determine and document required updates to existing organisational operation 2.2 Determine and document service disruption and task requirements for implementing cyber operations 2.3 Distribute document to required personnel in preparation for required implementation

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3. Implement organisational cyber security operations	3.1 Initiate implementation of cyber security operations according to task requirements 3.2 Implement required operational and analytical processes 3.3 Implement personnel requirements according to task requirements 3.4 Implement incident reporting and escalating procedures 3.5 Implement required hardware and software support requirements
4. Test and finalise	4.1 Test operational processes of cyber security operations and determine alignment to requirements 4.2 Analyse performance and document required operational changes 4.3 Update cyber security operations according to analysis results and determine required alignment to task requirements 4.4 Review final cyber security strategy and document and lodge document according to organisational procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Interprets information from technical, manufacturer and organisational documentation to determine and confirm job requirements
Writing	• Prepares complex workplace documentation detailing analysis, findings and recommendations using required structure, layout and technical programming language
Planning and organising	• Develops information security strategies using logical sequencing
Problem solving	• Identifies context to recognise anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise
Self-management	• Takes full responsibility for identifying and considering organisational protocols and requirements
Technology	• Identifies principles, concepts, language and practices associated with the digital and cyber world

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Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCYS602 Implement cyber security operations

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- plan, implement and test cyber security operations on at least one occasion.

In the course of the above, the candidate must:

- establish existing operational environment within organisation
- analyse effectiveness of existing operations.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- inherent requirements of cyber security operations environment
- organisational procedures applicable to implementing cyber security operations, including:
- documentation processes
- establishing requirements and features of cyber security operations strategies
- testing methodologies.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- software and its components applicable to implementing cyber security operations
- network security providers and solutions required to implement cyber security operations
- site server

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- standards for Cyber security ISO/IEC 27000 series, Information security management systems standards
- application and user security technologies.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTCYS603 Undertake penetration testing for organisations

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to use a range of methodologies to simulate an attack on an organisation's information and security systems and report the results back to the organisation.

It applies to those who work as network security specialists or administrators and conduct a simulated attack on an organisation's cyber assets to determine the effectiveness of the organisation's cyber security measures.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Cyber security

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for penetration testing	1.1 Analyse organisation's existing cyber security environment, systems and network requirements 1.2 Identify individual data types and level of security requirements 1.3 Establish and outline goal and objectives of performing penetration testing 1.4 Evaluate scanning tools and select according to vulnerability assessment requirements 1.5 Establish and document testing regime and schedule, and requirements according to organisational procedures

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2. Conduct penetration tests	2.1 Perform penetration test according to testing plan and procedures 2.2 Identify and document vulnerabilities arising from vulnerability assessment 2.3 Identify and document potential threats arising from penetration test according to organisational and testing procedures
3. Conduct follow up activities	3.1 Remediate identified vulnerabilities according to testing procedures 3.2 Determine and document improvement plan 3.3 Evaluate penetration testing effectiveness against testing plan and procedures 3.4 Escalate unresolved vulnerabilities to required personnel 3.5 Submit documentation to required personnel and seek and respond to feedback

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	**DESCRIPTION**
Numeracy	• Uses mathematical formulae to determine requirements for penetration testing
Reading	• Identifies information from technical, manufacturer and organisational documentation to determine and confirm job requirements
Writing	• Prepares complex workplace documentation findings, threats and work performed using required structure, layout and required language
Planning and organising	• Operates from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation, and identifying and addressing issues
Problem solving	• Identifies context to recognise anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise
Self-management	• Takes full responsibility for identifying and considering organisational protocols and requirements
Technology	• Identifies principles, concepts, language and practices associated with the digital and cyber world

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Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCYS603 Undertake penetration testing for organisations

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- plan and implement penetration testing and resolve queries and vulnerabilities on at least three vulnerabilities.

- In the course of the above, the candidate must:
- identify weaknesses as part of penetration testing process.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- security risks and vulnerabilities in software systems
- tools used in testing a network for vulnerabilities including scanning tools
- advanced level penetration testing of a system
- methods and tools used to protect data in an organisation
- risk mitigation strategies
- organisational procedures applicable to undertaking penetration testing, including:
- establishing goals and objectives of penetration testing
- defining scope of testing and establishment of testing regime
- documenting established requirements
- establishing penetration testing procedures
- documenting findings, threats and work performed
- key organisational environments, systems and networks required to undertake penetration testing for organisations.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- hardware, software and digital devices required to undertake penetration testing
- analytic platform and applicable user instructions
- data recognition software
- single security device and an organisation device
- legislative requirements and organisational policies and procedures applicable to undertaking penetrations testing.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCYS604 Implement best practices for identity management

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to identify, confirm and implement best practices for identity management in the cyber environment to minimise threats, risks and cybercrime attacks.

It applies to those who work as network security specialists or administrators and are responsible for overseeing and implementing an organisation's best practices to confirm safe cyber security management of personal and identifiable information.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Cyber security

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Analyse organisation's identity management best practices	1.1 Identify and summarise organisation's identity management practices 1.2 Analyse organisation's identity management environment, processes and requirements 1.3 Identify legislation and industry requirements required to implementing best practices for identity management
2. Design and implement best practices	2.1 Develop and document strategy for identity management best practices plan 2.2 Develop and document implementation strategy in consideration of technical, personnel, performance

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ELEMENT	PERFORMANCE CRITERIA
	benchmarks and timeline requirements, according to organisational policies and procedures 2.3 Distribute documents to required personnel in preparation for implementation 2.4 Conduct implementation of best practices strategy according to organisational requirements and implementation plan
3. Finalise implementation of strategy	3.1 Analyse organisation's performance against best practices benchmark 3.2 Summarise outcomes of analysis and identify areas risk and high vulnerability 3.3 Update plan with suggested remediation strategy for identified areas of risk and vulnerability 3.4 Submit finalised documentation to required personnel and seek and respond to feedback 3.5 Lodge all documentation according to organisational policies and procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Obtains information applicable to organisational procedures and identity management standards and principles • Monitors outcomes of decisions, considering results and identifying key concepts and principles that may be adaptable in the future
Reading	• Interprets information from different sources in a range of formats when identifying best practices and interpreting how these standards apply to the organisation
Writing	• Prepares complex workplace documentation detailing processes and outcomes using required structure, layout and required language
Planning and organising	• Uses problem solving skills to identify anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise

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Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCYS604 Implement best practices for identity management

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design, implement and analyse best practices for identity management in an organisation on at least one occasion.

In the course of the above, the candidate must:

- identify an organisation's operating environment
- document processes and outcomes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- organisation's operating and cyber environment applicable to identity management
- identity management methodologies required in the cyber environment
- best practices and legislation required to implement best practices for identity management
- organisational procedures applicable to implementing best practices for identity management including:
  - documentation processes
  - designing secure network infrastructure
  - establishing requirements and features of information security strategies
  - establishing baselines and metrics
  - testing methodologies.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- hardware, software and digital devices required to undertake identity management tasks
- software that identifies data categorise and access privilege
- legislation and policies and procedures required to identity management best practices.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCYS606 Evaluate an organisation's compliance with cyber security standards and law

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to identify cyber security standards and laws and evaluate an organisation’s working practices and compliance to these standards and laws as well as determine changes required to continue compliance.

It applies to those who work in an internal audit function, including those who specialise in cyber security and compliance and are responsible for implementing and monitoring an organisation’s compliance to cyber security standards and laws both locally and internationally.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Cyber security

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Research existing security standards and laws	1.1 Identify standards and laws required for organisations cyber security operations and summarise findings 1.2 Analyse and align required laws and standards to organisational cyber operations 1.3 Obtain and analyse organisation’s existing cyber security compliance strategies and document outcomes according to organisational policies and procedures 1.4 Determine time periods and benchmarking of compliance

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	evaluation requirements
2. Analyse compliance activities	2.1 Conduct compliance assessment according to organisational and legislative requirements 2.2 Document assessment findings according to organisational policies and procedures 2.3 Identify and document areas of non-compliance and near misses
3. Align organisation's activities to required standards	3.1 Develop and document all compliance requirements 3.2 Distribute requirements to required personnel in preparation to realign business activities to requirements 3.3 Develop an evaluation strategy according to organisational policies and procedures 3.4 Submit all documents to required personnel and seek and respond to feedback

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Obtains information applicable to legislative requirements and organisational procedures and identity management standards and principles • Monitors outcomes of decisions, considering results and identifying key concepts and principles that may be adaptable in the future
Reading	• Interprets information from different sources in a range of formats when identifying best practices and interpreting how these standards apply to the organisation
Writing	• Uses industry specific terminology in documenting research findings, recommendations and best practice implementation
Planning and organising	• Uses problem solving skills to identify anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise

Unit Mapping Information

No equivalent unit. New unit.

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Links

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Assessment Requirements for ICTCYS606 Evaluate an organisation's compliance with cyber security standards and law

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify cyber security standards and laws and analyse an organisation’s operations and compliance to required laws and standards on at least one occasion.

In the course of the above, the candidate must:

- document processes and summarise findings.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- security risks, and tolerance of risk in an organisation
- cyber security standards, regulations and laws applicable to the organisation
- organisational business processes and applicable cyber security requirements in each area
- principles of cyber security
- methods of identifying cyber security incidents
- different types of cyber security incidents including security vulnerabilities and malware.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- standards outlining cyber security standards and laws applicable to the organisation
- software required to implement cyber security standards and laws.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTCYS607 Acquire digital forensic data

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to acquire, extract and analyse data from devices and workstations, including mobile devices, networked devices, smart devices, Internet of Things (IoT) devices and microcontrollers, USBs, applications, networks and systems. It applies to skills needed to extract evidence pertaining to either a forensic investigation directly caused on a computer, or as part of evidence relating to a crime or e-crime.

It applies to those working in cyber and forensic roles including, digital forensic examiners, incident responders and corporate investigators and are responsible for forensic data retrieval.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Cyber security

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Confirm incident and prepare to acquire data	1.1 Confirm and gather initial information on reported incident according to organisational policies and procedures 1.2 Research and assess occurrence according to organisational forensic data extraction requirements 1.3 Research and identify all laws and legislation required for data extraction tasks 1.4 Discuss and confirm if acquisition is required with required personnel

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ELEMENT	PERFORMANCE CRITERIA
	1.5 Consult and gather key incident information from required personnel 1.6 Identify device and components pertaining to incident according to task requirements 1.7 Develop and document data extraction plan and information gathered according to organisational requirements 1.8 Submit documentation to required personnel and seek and respond to feedback
2. Acquire forensic data	2.1 Contact and gather information from required personnel 2.2 Seize device pertaining to incident according to incident and legislation 2.3 Access and open device according to data extraction task requirements 2.4 Secure device's networks, data logs, firewalls and hashing according to task requirements 2.5 Initiate data extraction according to task requirements and confirm that no data is tampered or deleted 2.6 Confirm completion of retrieval according to task requirements 2.7 Verify the hash according to task requirements 2.8 Document observations and findings and methodology
3. Analyse forensic data	3.1 Analyse data and verify against incident scope, information, devices and evidence 3.2 Document findings and analysis and submit to required personnel 3.3 Discuss abnormalities and confirm further evidence, devices and information needed 3.4 Make additional extractions according to task and technical requirements 3.5 Analyse network conversations according to task requirements 3.6 Verify chain of custody according to hash according to task requirements 3.7 Update findings and methodology in documentation according to organisational needs
4. Finalise data acquisition	4.1 Prepare data extracts and documentation for submission according to organisational and legislative requirements 4.2 Submit data extracts and analysis according to organisational and legislative requirements 4.3 Retrieve sign off from required personnel and gather feedback according to organisational policies and procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Interprets information from technical, manufacturer, organisational and legislative documentation to determine and confirm job requirements
Writing	• Develops workplace and legislative documentation for a specific audience, using detailed language to convey explicit information, requirements and recommendations
Planning and organising	• Develops a strategic plan form task specification that include developing the operational detail in stages, regularly reviewing priorities and performance during data extraction tasks, and identifying and addressing issues as they arise
Problem solving	• Initiates ways to engage in strategic problem-solving approaches that incorporates linear and non-linear methodologies
Self-management	• Uses systematic processes, setting goals, gathering required information and identifying and evaluating options against agreed criteria
Technology	• Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCYS607 Acquire digital forensic data

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify, acquire and analyse digital forensic data from at least three device types, according to a reported incident.

In the course of the above, the candidate must:

- document analysis findings
- adhere to required organisational and legislative guidelines.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard legislation and organisational procedures relating to acquiring digital forensic data, including
- privacy standards and policies
- data standards and policies
- internet and user identification protocols
- mobile technology protocols
- data extraction methodologies and seizure techniques on a variety of devices, including how not to damage or destroy digital evidence
- features and markers of hashing
- communication investigation techniques
- functions and features of computer systems and data stores
- data logs, including server, network and firewall logs
- function and features of system back ups
- data extraction and forensic copying techniques
- file formats including structures, locations and file systems

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- data acquisition, identification and extraction methodologies including:
  - industry standard forensic tools
  - non-invasive and invasive methodologies.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- three or more devices with data required for data extraction tasks
- forensic software tools required to extract data from device
- legislative and organisational procedures and requirements relating to the acquisition of digital forensic data.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCYS608 Perform cyber security risk assessments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to conduct a risk assessment and analysis in a business environment. The risk assessment requires the identity and alignment of an organisation's operating environment to their required risk register and the realignment of their operations.

It applies to those who work in risk functions of an organisation, including ICT risk managers, cyber security engineers, network engineers, DevOps engineers and cyber security solutions architects, and are responsible for designing security solutions.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Cyber security

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to perform risk assessment	1.1 Analyse organisations risk culture and document findings according to organisational requirements 1.2 Research and document legislative and organisational cyber security risk requirements 1.3 Obtain and analyse organisation's risk register and determine its currency against organisational legislative requirements 1.4 Develop and document risk assessment plan according to organisational requirements 1.5 Communicate risk assessment plan with required personnel

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	and seek and respond to feedback
2. Perform risk assessment	2.1 Initiate risk assessment according to plan 2.2 Document process and outcomes of risk assessment according to organisational policies and procedures
3. Finalise risk assessment	3.1 Analyse and document findings against risk register and determine operations outside of organisation's risk appetite 3.2 Develop and document operational measures to align operations against risk register requirements 3.3 Communicate risk assessment findings to required personnel and highlight areas of non-compliance and solutions 3.4 Lodge documentation according to organisational requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Interprets and applies technical, legislative and organisational documentation to determine and confirm compliance and job requirements and compliance
Writing	• Develops workplace and legal documentation for a specific audience, using detailed language to convey explicit information, requirements and recommendations
Planning and organising	• Develops the operational detail in stages, regularly reviewing priorities and performance during assessment procedure, and identifies and addresses issues of non-compliance
Problem solving	• Demonstrates an understanding of context to recognise anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCYS608 Perform cyber security risk assessments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- conduct a cyber security risk assessment on at least one occasion.

In the course of the above, the candidate must:

- identify and analyse an organisation's risk appetite and risk register against their daily operations
- research cyber security legislation and align organisational risk assessment to require legislation
- document processes and outcomes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- risk assessment methodologies and processes required in cyber security
- methodologies of identifying and measuring risk culture and risk appetite in the cyber environment
- sources of legislative requirements required in cyber security
- organisational procedures applicable to conducting a cyber security risk assessment including,
- documenting risk assessment processes and findings
- establishing requirements and features of cyber security risk assessment processes.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

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This includes access to:

- software required to conduct a risk assessment
- legislative documentation required to conduct a cyber security risk assessment
- information applicable to organisational environment, culture and operations required to conduct a cyber security risk assessment.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTCYS609 Evaluate threats and vulnerabilities of IoT devices

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to gather Internet of Things (IoT) devices and data from various sources and evaluate and identify threats and vulnerabilities.

It applies to those who work as IoT developers or cyber security and risk analysts and are responsible for cyber security activities including the evaluating IoT devices for threats and vulnerabilities.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Cyber security

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Develop evaluation strategy	1.1 Research and determine an organisation’s requirements for evaluation of IoT devices 1.2 Research organisational operations, environment and culture and determine perceived threats and vulnerabilities 1.3 Develop and document evaluation strategy according to organisational requirements, policies and procedures 1.4 Submit evaluation strategy to required personnel and seek and respond to feedback
2. Prepare to valuate IoT devices	2.1 Prepare devices for evaluation according to technical specifications 2.2 Secure data and networks according to technical specifications

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3. Conduct evaluation	3.1 Run evaluation according to documented strategy and organisational policies and procedures 3.2 Confirm and document identified vulnerabilities and threats according to organisational policies and procedures 3.3 Document evaluation results according to organisational guidelines and requirements
4. Interpret and finalise findings	4.1 Analyse evaluation findings and determine completeness and accuracy 4.2 Categorise negative findings into threats and vulnerability and determine level of potential impact to operational activities 4.3 Develop and document recommendations to remediate threat potential and lessen vulnerabilities 4.4 Document finalised results and recommendations according to organisational requirements 4.5 Lodge documentation according to organisational policies and procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Uses mathematical formulae to determine requirements for evaluating quantitative findings
Reading	• Identifies technical, manufacturer and organisational from documentation to determine and confirm job requirements
Writing	• Prepares complex workplace documentation detailing processes and outcomes using required structure, layout and required language
Planning and organising	• Develops the operational detail in stages, regularly reviewing priorities and performance during assessment procedure, and identifies and addresses issues of non-compliance
Problem solving	• Identifies context to recognise anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise
Self-management	• Takes full responsibility for identifying and considering organisational protocols and requirements
Technology	• Identifies principles, concepts, language and practices associated with the digital and cyber world

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Unit Mapping Information

No equivalent unit. New unit.

Links

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Assessment Requirements for ICTCYS609 Evaluate threats and vulnerabilities of IoT devices

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- research and analyse an organisation's internal and external operating culture, systems and networks to evaluate threats and vulnerabilities of IoT devices and interpret findings from at least three different IoT devices.

In the course of the above, the candidate must:

- document processes and outcomes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- security risks and vulnerabilities in software systems
- security risks and vulnerabilities of IoT devices
- tools used in testing a network for vulnerabilities of IoT devices
- tools used in testing a network for threats and vulnerabilities
- penetration testing methodologies required to evaluate threats and vulnerabilities of IoT devices
- risk mitigation strategies
- organisational procedures applicable to running vulnerability and threat assessments for IoT devices, including:
  - establishing goals and objectives of vulnerability assessments
  - defining scope of testing and establishment of testing regime
  - documenting established requirements
  - establishing penetration testing procedures
  - documenting findings, threats and work performed

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- key organisational environments, systems and networks required to evaluate threats and vulnerabilities of IoT devices.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- required hardware, software and IoT devices required to evaluate threats and vulnerabilities
- required analytic platform and applicable user instructions
- data recognition software required to evaluate threats and vulnerabilities
- organisational policies and procedures applicable to gathering, analysing and interpreting threat data.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCYS610 Protect critical infrastructure for organisations

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to analyse an organisation's critical cyber operations and develop and implement a critical protections strategy that addresses the needs of the organisation.

It applies to those who work as senior network and server administrators, cyber security analysts, security engineers, network engineers other cyber security related roles and are responsible for cyber security activities, including researching, developing and implementing protection strategies.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Cyber security

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Research critical infrastructure need for an organisation	1.1 Research organisation's need for critical infrastructure protection and document findings according to organisational requirements 1.2 Analyse organisation's existing critical infrastructure protection plan 1.3 Determine effectiveness and alignment of existing plan to organisational requirements 1.4 Identify operational systems, critical assets, segmentation and legislative requirements

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ELEMENT	PERFORMANCE CRITERIA
	1.5 Determine level of protection, vulnerability, risk and mitigation according to organisational requirements
2. Develop protection strategy	2.1 Consolidate research findings and map critical processes according to organisational requirements 2.2 Develop and document critical infrastructure protection plan according to organisational policies and procedures 2.3 Submit protection plan to required personnel and seek and respond to feedback
3. Implement protection strategy	3.1 Backup data according to organisational policies and procedures 3.2 Secure devices according to protection plan and technical requirements 3.3 Implement network segmentation according to protection plan and technical requirements 3.4 Apply software patches according to technical requirements 3.5 Implement additional protection plan requirements and asset management processes
4. Test implementation outcomes	4.1 Test deployment of protection plan according to organisational policies and procedures 4.2 Obtain and analyse results according to organisational policies and procedures 4.3 Determine and document additional protection methods for critical infrastructure protection 4.4 Submit documentation to required personnel and seek and respond to feedback

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Identifies technical, manufacturer and organisational from documentation to determine and confirm job requirements
Writing	• Prepares complex workplace documentation detailing processes and outcomes using required structure, layout and required language
Planning and organising	• Develops the operational detail in stages, regularly reviewing priorities and performance during strategy development and

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SKILL	DESCRIPTION
	implementation, and identifies and addresses issues challenges as they arise
Problem solving	• Identifies context to recognise anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise
Self-management	• Takes full responsibility for identifying and considering organisational protocols and requirements
Technology	• Identifies principles, concepts, language and practices associated with the digital and cyber world

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCYS610 Protect critical infrastructure for organisations

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- research, develop, implement and test an organisation’s critical protection infrastructure plan.

In the course of the above, the candidate must:

- analyse operating environment
- document processes and outcomes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- critical infrastructure sectors and assets
- cyber security methodologies required to protect infrastructure for organisations
- legislative requirements applicable to researching, analysing and developing critical infrastructure protection policies.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- required hardware, software and components
- organisational operating environments, networks and systems
- organisational style guides required for presenting documented processes, procedures and findings.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTCYS611 Configure security devices for organisations

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to implement the device security configuration on WAN links and DMZs for a medium to large size organisation.

It applies to those who work in senior cyber security roles including, senior network and senior server administrators, network engineers and security architects, and are responsible for the configuration and implementation of security for required devices.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Cyber security

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare configuration of security devices	1.1 Conduct a needs analysis and determine organisation's needs to configure security devices 1.2 Determine devices required for configuration according to organisational requirements 1.3 Determine network and system security requirements 1.4 Obtain and review manufacturing and technical requirements for devices 1.5 Research and document device risk threats and vulnerabilities according to organisational requirements
2. Design configuration plan	2.1 Develop and document configuration plan according to organisational requirements

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Submit plan to required personnel and seek and respond to feedback 2.3 Finalise plan and communicate to required personnel in preparation for configuration
3. Configure security devices	3.1 Isolate devices according to technical specification and configuration plan 3.2 Configure virtual networks according to specifications and plan 3.3 Configure secure site-to-site connectivity and VPN requirements 3.4 Implement required encryption according to specifications and plan 3.5 Implement a DMZ according to specifications and plan
4. Test configured devices	4.1 Test configuration capabilities against requirements 4.2 Conduct penetration test and record outcomes according to organisational requirements 4.3 Document and communicate test findings to required personnel and implement any required configuration changes 4.4 Lodge documentation according to organisational policies and procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Organises, evaluates and critiques ideas and information from a range of complex texts • Uses a range of strategies to build and maintain understanding throughout complex texts
Writing	• Prepares complex workplace documentation detailing processes and outcomes using required structure, layout and required language
Planning and organising	• Develops the operational detail in stages, regularly reviewing priorities and performance during strategy development and implementation, and identifies and addresses issues challenges as they arise
Problem solving	• Identifies context to recognise anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise

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SKILL	DESCRIPTION
Technology	• Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world and uses these to troubleshoot and understand the uses and potential of new technology

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCYS611 Configure security devices for organisations

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design a security configuration plan and implement device configuration for at least three different security devices.

In the course of the above, the candidate must:

- conduct cyber security needs analysis
- document processes and outcomes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- procedures for configuring, verifying and troubleshooting security devices
- cyber security device configuration methodologies
- conducting cyber security needs analysis
- configuring security networks required to configure security devices.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- required hardware, software and components
- devices required for configuration
- risk appetite of organisation required to configure security devices
- organisational operating environments, networks and systems

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- organisational style guides required for presenting documented processes, procedures and findings.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTCYS612 Design and implement virtualised cyber security infrastructure for organisations

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to research, design, implement and test virtualised cyber security infrastructure in a small to medium sized organisation.

It applies to those who work in senior systems administrator roles including, network engineers and systems engineers, and are responsible for the design and implementation of virtualised cyber security infrastructures.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Cyber security

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to design infrastructure	1.1 Analyse organisation's operations to determine cyber security needs 1.2 Research and identify industry standard network security options and security technologies 1.3 Determine data types, security levels, mission-critical network servers and secure boundary requirements
2. Design and plan infrastructure	2.1 Design and document infrastructure requirements according to organisational requirements 2.2 Determine and document implementation plan and timeframes 2.3 Obtain tools, network access and data according to

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	organisational requirements 2.4 Plan and document network security monitoring strategy according to organisational requirements 2.5 Distribute documentation to required personnel and seek and respond to feedback
3. Implement infrastructure	3.1 Establish and create network boundaries according to infrastructure plan requirements 3.2 Implement network and server technologies according to infrastructure plan requirements 3.3 Implement user security technologies according to infrastructure plan requirements 3.4 Set security levels and user access according to organisational requirements 3.5 Establish network security monitoring strategy according to plan requirements
4. Test infrastructure	4.1 Test deployment of security infrastructure and its components according to technical specifications and infrastructure plan requirements 4.2 Obtain and analyse test results, logs and user feedback 4.3 Adjust implemented technologies according to organisational requirements and user feedback

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	**DESCRIPTION**
Learning	• Monitors outcomes of decisions, considering results and identifying key concepts and principles that may be adaptable in the future
Oral communication	• Uses listening and questioning techniques to articulate information and requirements using industry standard technical language intended for audience and environment
Reading	• Interprets technical, manufacturer and organisational documentation to determine and confirm job requirements
Writing	• Prepares complex workplace documentation detailing processes and findings using required structure, layout and required language
Planning and organising	• Develops the operational detail of an activity in stages, regularly reviewing priorities and performance during implementation, and identifying and addressing issues

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SKILL	DESCRIPTION
Problem solving	• Uses a developed understanding of context to recognise anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise
Self-management	• Takes responsibility for identifying and considering organisational protocols and requirements • Uses systematic processes, setting goals, gathering required information and identifying and evaluating options against agreed criteria
Technology	• Demonstrates an understanding of principles, concepts, language and practices associated with the digital world

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCYS612 Design and implement virtualised cyber security infrastructure for organisations

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design and implement cyber security infrastructure and review results against organisational needs on at least two different occasions.

In the course of the above, the candidate must:

- identify an organisation's vulnerabilities, cyber security needs and data protection requirements
- document findings, plan and processes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- features and implementation methodologies of cyber security
- cyber security infrastructure features including:
  - application security
  - business continuity planning
  - disaster recovery planning
  - operational security (OPSEC)
  - threat vectors
- organisational business processes and applicable cyber security requirements design and implementation
- organisational procedures applicable to designing and implementing cybersecurity infrastructure, including:
  - documenting established requirements, risks and work performed
  - establishing requirements and features of cyber security infrastructure

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  - establishing maintenance and alert processes
  - testing methods and procedures
- security risks, and tolerance of risk in an organisation
- industry standard cyber security providers
- industry standards and regulations applicable to implementing cyber security infrastructure in an organisation
- organisation, infrastructure and cyber security requirements.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- hardware, software and its components required in the design and implementation of cyber security infrastructure
- an organisation's operational details required for determining cyber security requirements
- application and user security technologies require for the design and implementation of cyber security infrastructure
- industry standard cyber security providers.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTCYS613 Utilise design methodologies for security architecture

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to design security architecture to organisation requirements, utilising specific design methodologies.

It applies to those who work in roles as senior network systems and server administrators,cyber security engineers, DevOps engineers and cyber security solutions architects and are responsible for designing security solutions.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Cyber security

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to design security infrastructure	1.1 Analyse an organisation’s operation and infrastructure to identify security requirements 1.2 Research and identify industry standard design methodologies utilised in security architecture design 1.3 Determine required security level and perimeters, security features and security mode 1.4 Establish all data types to be included in security architecture 1.5 Document all security architecture findings and confirm with required personnel
2. Design security	2.1 Establish and document specific requirements and features

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architecture	of security requirements 2.2 Design and document security solution according to organisational requirements 2.3 Submit documentation to required personnel for initial feedback
3. Finalise security architecture	3.1 Demonstrate security design utilises major industry standard design methodologies 3.2 Demonstrate security design addresses organisational cyber security requirements 3.3 Submit documentation to required personnel and seek and respond to feedback

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Monitors outcomes of decisions, considering results and identifying key concepts and principles that may be adaptable in the future
Reading	• Interprets technical, manufacturer and organisational documentation to determine and confirm job requirements
Writing	• Prepares complex workplace documentation detailing findings and solutions using required structure, layout and required language
Planning and organising	• Develops the operational detail in stages, regularly reviewing priorities and performance during implementation, and identifying and addressing issues
Problem solving	• Uses understanding of context to recognise anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise
Self-management	• Takes responsibility for identifying and considering organisational protocols and requirements • Uses systematic processes, setting goals, gathering required information and identifying and evaluating options against agreed criteria
Technology	• Demonstrates an understanding of principles, concepts, language and practices associated with the digital world

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Unit Mapping Information

No equivalent unit. New unit.

Links

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Assessment Requirements for ICTCYS613 Utilise design methodologies for security architecture

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- use methodologies to design at least one cyber security solution for an organisation on at least one occasion.

In the course of the above, the candidate must:

- research and analyse industry standard design methodologies for designing security architecture
- document finalised security solution.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard cyber security design methodologies
- principles of cyber security
- principles of security architecture
- different types of cyber security risks required to design security architecture
- presenting security architecture in document form.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- organisational data
- organisational operating structure

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- organisational procedures applicable to designing security architecture including:
  - documentation processes
  - establishing requirements and features of security strategies
  - establishing baselines and metrics
  - testing methodologies.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTDAT401 Evaluate organisational compliance with data ethics legislation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to evaluate and confirm that an organisation meets the legal obligations of data ethics legislation.

It applies to data analytics specialists who work in higher-level positions within in a broad range of industries and are responsible for ethical and legal aspects of data handling.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Data analytics

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Confirm required data ethics legislation	1.1 Identify data ethics legislation according to industry legal requirements 1.2 Identify voluntary codes and industry standard best practices according to organisational requirements 1.3 Document all identified regulations that impact organisation's operations according to organisational policies and procedures
2. Review organisation's compliance to identified legislation	2.1 Review and determine organisational compliance with required data-related legislation, policies and procedures 2.2 Document compliance review findings of non-compliance according to organisational policies and

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	procedures 2.3 Develop and document non-compliance corrective action plan according to organisational policies and procedures
3. Finalise organisation's evaluation	3.1 Submit non-compliance corrective action plan to required personnel 3.2 Seek and respond to non-compliance corrective action plan 3.3 Communicate review schedule and legislative changes to required personnel 3.4 Present documented review findings to required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Modifies behaviour following exposure to new information
Oral communication	• Uses listening and questioning techniques to confirm task requirements and articulate complex concepts using relevant industry for intended audience
Reading	• Interprets information from relevant sources to determine organisational impacts relating to data ethics legislation
Writing	• Prepares documentation using industry-related terminology
Planning and organising	• Takes responsibility for planning, sequencing stages in modifying standards relating to data ethics • Prioritises tasks and own workload for required outcomes
Self-management	• Implements standard procedures and makes decisions for routine tasks • Uses formal decision-making processes for more complex and non-routine situations

Unit Mapping Information

No equivalent unit. New unit.

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Links

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Assessment Requirements for ICTDAT401 Evaluate organisational compliance with data ethics legislation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- review and improve an organisation-wide review of data-related policies and procedures.

In the course of the above, the candidate must:

- confirm compliance with data ethics legislation
- communicate review schedule and legislative changes
- document review outcomes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- legislative requirements and standards relating to protecting data integrity, including data protection, privacy laws and regulations
- organisational policies, procedures and protocols relating to protecting data integrity including for:
  - data accuracy
  - verifying data security
  - data discrepancies between different sources
  - identifying data breaches
- ethical management and governance of data, including balancing data availability and data confidentiality
- compliance requirements and regulations relating to data loss and documentation procedures and corrective actions relating to non-compliance
- policy review procedures
- codes of practice relating to data management.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- information and data sources to inform data analysis
- information and telecommunications equipment required to analyse data
- industry standards, organisational procedures, and legislative requirements.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTDAT402 Clean and verify data

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to clean and verify data obtained from a variety of sources. It involves the use of analytics and review to ensure data quality for an organisation is according to industry practices and organisational policies, procedures and protocols.

It applies to data analytics specialists who work within in a broad range of industries and are responsible for processing data sets for a business.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Data analytics

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare data sets	1.1 Identify data sets and establish task requirements according to business needs 1.2 Unify data from different sets according to task requirements 1.3 Review data and confirm accuracy of input and restriction to numerical values
2. Review and clean data set	2.1 Identify and remove incorrect data input and formulate data according to task requirements 2.2 Confirm required data set parameter range according to task requirements 2.3 Run analytics and confirm that data set consistency according

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ELEMENT	PERFORMANCE CRITERIA
	to task requirements 2.4 Remove any data values that are outside upper and lower threshold of acceptable range
3. Verify data set	3.1 Confirm consistency between digitally entered data and manually entered data 3.2 Identify and review over-writes according to organisational requirements 3.3 Review data set and confirm analytical suitability according to task requirements 3.4 Store data set securely according to organisational procedures, legislative requirements and industry standard practices 3.5 Obtain final task sign off from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Modifies behaviour following exposure to new information
Numeracy	• Interprets mathematical data and applies interpretation to task outcomes • Completes complex calculations and records mathematical data
Planning and organising	• Sequences stages in cleaning and verifying data efficiently and logically • Prioritises tasks and own workload for required outcomes
Problem solving	• Identifies and resolves barriers to successful delivery of cyber security infrastructure • Demonstrates an understanding of how to address less predictable problems and initiates standard procedures in response
Self-management	• Implements standard procedures and makes decisions for routine tasks
Technology	• Uses technology platforms to assist with data analysis

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Unit Mapping Information

No equivalent unit. New unit.

Links

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Assessment Requirements for ICTDAT402 Clean and verify data

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- combine at least two data sets from different sources
- confirm accuracy of the two combined data sets.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- legislative requirements relating to data capture and storage, including data protection, security and privacy laws and regulations
- organisational policies, procedures and protocols relating to protecting data integrity for:
  - data accuracy
  - identification of data over-writes
  - verifying data security
  - monitoring data discrepancies between different sources
  - digital versus manual data entry
  - monitoring data integrity
  - identifying where data breaches have occurred
- ethical management and governance of data, including determining availability of data and confidentiality of data
- compliance requirements and regulations relating to data loss
- key components of policies in place for protecting confidential and private business information and intellectual property in data assets, including:
  - privacy policies
  - security policies
  - intellectual property policies
- data analytics including feature extraction procedures.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- information and data sources to inform data analysis
- information and telecommunications equipment required to analyse data
- industry standards, organisational procedures, and legislative requirements.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTDAT501 Gather, analyse and verify data from different source inputs

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to gather, analyse, test and verify data from different source inputs.

It applies to those who work in data analytics roles in the Information and Communications Technology (ICT) environment and are responsible for identifying data from a range of source inputs, analysing and investigating abnormalities and reporting against an organisation's requirements.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Data analytics

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1.Plan for data extraction and gathering	1.1 Analyse organisation's structure, operations and data, and identify need for data analysis 1.2 Determine required data sources, data types and extraction techniques 1.3 Plan and document data extraction methods according to task requirements 1.4 Determine and document organisational impact of data gathering 1.5 Communicate data extraction activities to required personnel

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ELEMENT	PERFORMANCE CRITERIA
2. Gather and prepare data for analysis	2.1 Secure data and prepare for extraction according to task requirements 2.2 Initiate data extraction on required data sources 2.3 Extract data according to task requirements 2.4 Determine completeness of data extraction according to task requirements
3. Analyse and verify data	3.1 Normalise data according to analysis requirements 3.2 Conduct analysis according to task requirements 3.3 Obtain analysis results and collate information according to task requirements 3.4 Compare results to analysis specifications and requirements and conduct any further data extraction and analysis requirements
4. Finalise reporting activities	4.1 Determine organisation's reporting format and structure 4.2 Report details on analysis activities and results according to task requirements 4.3 Submit report to required personnel and seek and respond to feedback

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Monitors outcomes of decisions, considering results and identifying key concepts and principles that may be adaptable in the future
Oral communication	• Uses listening and questioning techniques to confirm requirements and articulate complex concepts using relevant industry for intended audience
Reading	• Interprets technical, manufacturer and organisational documentation to determine and confirm job requirements
Writing	• Develops documentation conveying explicit information, requirements and recommendations for a specific audience, using clear and detailed language
Planning and organising	• Uses a formal, logical planning processes together with an increasingly intuitive understanding of context
Problem solving	• Analyses context to recognise anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as

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SKILL	DESCRIPTION
	they arise
Self-management	• Takes end-to-end responsibility for identifying and considering relevant organisational protocols and requirements • Uses systematic processes, setting goals, gathering required information and identifying and evaluating options against agreed criteria
Technology	• Identifies principles, concepts, language and articulates associated with the digital world

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTDAT501 Gather, analyse and verify data from different source inputs

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- gather information from two different types of data sources in order to conduct analysis and report on at least two occasions.

In the course of the above, the candidate must:

- identify and conduct data normalising methodologies.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- data extraction methodologies
- data normalising methodologies used in data analysis and data reporting
- methodologies of securing and preparing data for data extraction
- industry standard data analysis methodologies
- technical requirements used in extracting different types of data.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the customer service field of work and include access to:

- different types of data required for extraction and analysis
- hardware and software and components required for data extraction and analysis tasks
- organisational data reporting style guide and reporting processes required for data reporting
- a site where activities can be carried out

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- data required for testing.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTDAT502 Conduct significance tests

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to prepare and test data against an organisation's requirements.

It applies to individuals who work in roles including, data analysts and data scientists, and run hypothesis testing on big data in a medium or large sized organisation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Data analytics

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to conduct significance test	1.1 Analyse organisational requirements for significance testing and determine hypothesis for testing 1.2 Determine testing boundaries and data validation methods 1.3 Select all required data and its sources 1.4 Plan and document data extraction procedure 1.5 Plan and document significance testing activities according to organisational requirements
2. Conduct testing	2.1 Extract and secure data according to task requirements 2.2 Normalise and structure data according task requirements 2.3 Initiate data analysis and determine correct progression 2.4 Manipulate variables within data according to task

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ELEMENT	PERFORMANCE CRITERIA
	requirements 2.5 Obtain testing results from required sources
3. Report test findings	3.1 Analyse test findings and determine testing has been completed according to test plan and task requirements 3.2 Analyse test findings and conclude hypothesis 3.3 Document testing activities and findings according to task requirements 3.4 Communicate findings with required personnel and seek and respond to feedback 3.5 Lodge documents according to organisational requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Oral communication	• Uses listening and questioning techniques to seek and respond to feedback
Reading	• Analyses technical, manufacturer and organisational documentation to determine and confirm job requirements
Writing	• Prepares required documentation conveying explicit information, requirements and recommendations according to organisational requirements
Planning and organising	• Uses a formal, logical planning processes together with an increasingly intuitive understanding of context
Problem solving	• Uses nuanced understanding of context to recognise anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise
Self-management	• Takes full responsibility for identifying and considering relevant organisational protocols and requirements • Uses systematic processes, setting goals, gathering required information and identifying and evaluating options against agreed criteria
Technology	• Demonstrates an understanding of principles, concepts, language and practices associated with the digital world

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Unit Mapping Information

No equivalent unit. New unit.

Links

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Assessment Requirements for ICTDAT502 Conduct significance tests

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- plan and conduct a significance test on extracted and normalised data and conclude finding on at least two occasions.

In the course of the above, the candidate must:

- identify and conduct data normalising methodologies
- develop a hypothesis used for significance testing.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- data extraction methodologies
- data normalising methodologies used in data analysis and data reporting
- methodologies of securing and preparing data for data extraction
- industry standard data analysis methodologies
- technical requirements used in extracting different types of data
- hypothesis development for significance testing
- report writing for reporting significance testing in data analytics.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the customer service field of work and include access to:

- hardware and software and components required for data analysis tasks

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- organisational data reporting style guide and reporting processes required for data reporting
- a site where activities can be carried out.
- data required for testing.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTDAT503 Use unsupervised learning for clustering

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to cluster data extracts from big data following unsupervised machine learning methodologies and report on the findings.

It applies to individuals who work in roles including, data analysts, data scientists, machine learning engineers, developers and programmers, and are responsible for data mining and machine learning activities with big data within medium to large organisations.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Data analytics

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1.Determine data clustering requirements	1.1 Research organisation’s need for data clustering and define problem, objective and outputs 1.2 Determine required machine and input data set according to task requirements 1.3 Define evaluation protocol and accepted measure of success 1.4 Develop and document required benchmark model
2. Prepare data	2.1 Collect data according to task requirements 2.2 Evaluate data quantity, completeness and alignment according to task requirements 2.3 Transform and format data according to specifications

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ELEMENT	PERFORMANCE CRITERIA
	2.4 Finalise data preparation according to task requirements
3. Cluster data	3.1 Input raw data according to task requirements 3.2 Run required algorithm and adhere to required processing time frame 3.3 Obtain output reports and determine completeness of task according requirements
4. Finalise data clustering tasks	4.1 Analyse data report and determine clustering tasks have been completed according to task requirements 4.2 Interpret, summarise and document findings 4.3 Communicate findings to required personnel and seek and respond to feedback 4.4 Lodge documentation according to task requirements and finalise task activities according to organisational requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Uses mathematical formulae to calculate required measurements, determine values and articulate numerical findings
Oral communication	• Uses listening and questioning techniques to seek and respond to feedback
Reading	• Analyses technical, manufacturer and organisational documentation to determine and confirm job requirements
Writing	• Prepares complex documentation detailing benchmark model and findings using relevant language to convey explicit information, requirements and recommendations
Planning and organising	• Uses a formal, logical planning processes together with an increasingly intuitive understanding of context
Problem solving	• Uses nuanced understanding of context to recognise anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise
Self-management	• Takes full responsibility for identifying and considering relevant organisational protocols and requirements • Uses systematic processes, setting goals, gathering required information and identifying and evaluating options against agreed

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SKILL	DESCRIPTION
	criteria
Technology	• Identifies principles, concepts, language and practices associated with the digital world

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTDAT503 Use unsupervised learning for clustering

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- collect, prepare and cluster data using unsupervised machine learning methodologies and report on the findings on at least two occasions.

In the course of the above, the candidate must:

- research industry standard approaches and methodologies for machine learning
- evaluate and prepare data.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methodologies for data clustering unlabelled data including intra-cluster cohesion and intra-cluster separation
- industry standard data clustering methodologies including benchmark modelling techniques for data clustering
- report writing methodologies relevant to reporting findings of data clustering activities
- industry standard machine learning methodologies relevant to unsupervised learning
- methodologies for modelling data relevant to unsupervised learning.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the customer service field of work and include access to:

- hardware and software and components required for using unsupervised learning for clustering

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- organisational data reporting style guide and reporting processes required for unsupervised learning and machine learning
- a site where activities can be carried out.
- data required for clustering.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTDBS416 Create basic relational databases

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to design, develop and test relational databases to meet specifications.

It applies to individuals who are database support staff, application programmers and web designers who are required to create a simple database to store information for an online, desktop, web or mobile device application, using a simple entity relational database on a web or database server environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Database

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to create relational database	1.1 Determine organisational database functionality requirements 1.2 Document organisational database requirements 1.3 Gather required data according to task requirements 1.4 Submit document to required personnel and according to organisational policies and procedures 1.5 Seek and respond to documentation feedback according to organisational policies and procedures
2. Design relational database	2.1 Design entity-relationship (ER) diagram to model relationships between entities, including entity attributes according to functionality requirements

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Define primary and foreign keys and implement relationships 2.3 Normalise database model 2.4 Develop data dictionary and detail entity attributes according to functionality requirements 2.5 Document ER diagram and data dictionary, including data model, and submit to required personnel 2.6 Seek feedback from required personnel, and update data model according to feedback
3. Create relational database	3.1 Use required language on web and database server to create relational database according to confirmed task design 3.2 Create tables according to required language and ER diagram 3.3 Populate database fields according to task requirements 3.4 Test and fix database problems on web and database server
4. Finalise relational database and required documentation	4.1 Determine alignment between represented information and task requirements 4.2 Confirm and submit all task documentation to required personnel 4.3 Seek and respond to feedback on task delivery and documentation 4.4 Save changes and obtain final task signoff from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Oral communication	• Obtains and responds to information and feedback from required personnel using succinct verbal language
Reading	• Analyses textual information to establish requirements
Writing	• Prepares required documentation detailing requirements, ER diagram and data dictionary using required format and cohesive and language
Teamwork	• Applies protocols governing what to communicate, with whom and how, in a range of work contexts
Planning and organising	• Plans a range of routine, and some non-routine, tasks, accepting stated goals and required outcomes

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Skill	Description
Problem solving	• Uses formal decision-making process, setting and clarifying goals, gathering information and identifying and evaluating several choices against a limited set of criteria • Applies formal problem-solving processes when tackling unfamiliar problems, breaking complex issues into manageable parts and identifying and evaluating options for action
Self-management	• Follows explicit and implicit procedures and meets expectations associated with own role when submitting documentation for approval and completing task requirements
Technology	• Demonstrates an understanding of key principles and concepts underpinning design and operation of digital systems and tools and applies these when designing and creating a database • Uses basic cyber security procedures and techniques to maintain database, hardware, software and internet integrity

Unit Mapping Information

Supersedes and is equivalent to ICTDBS403 Create basic databases.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTDBS416 Create basic relational databases

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- create a database on a database server, web hosting service or file server with at least three tables, on at least one occasion.

In the course of the above, the candidate must:

- design a database that meets task requirements
- test and debug database
- save changes to database.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- processes used for creation of entities, attributes, and in populating fields, using software solutions and script-based input
- data-modelling techniques
- database design, modelling and implementation procedures
- naming conventions for database design
- security restrictions on servers, incorporating some theoretical concepts
- cyber security functions, policies and procedures according to organisation.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

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- equipment, materials, hardware and industry standard software packages
- internet access including:
  - connectivity
  - different browsers
- software for creating entity-relationship (ER) diagrams
- software development environment.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTDBS417 Identify and resolve common database performance problems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to diagnose database problems and to configure and tune the database in order to maintain consistent and optimised performance.

It applies to individuals who are experienced technical support personnel, including help-desk supervisors, database support technicians, Information and Communications Technology (ICT) support technicians, and user-support specialists, who are responsible for maintaining the performance of a database.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Database

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Diagnose and resolve database problems	1.1 Determine database performance diagnostic tool, according to organisational database requirements and vendor recommendations 1.2 Run diagnostic test and identify database performance degradation issues 1.3 Determine and record misuse of database and temporary table spaces 1.4 Carry out required fixes according to diagnostic results 1.5 Record issues and actions taken and escalate unresolved issues to required personnel

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ELEMENT	PERFORMANCE CRITERIA
2. Configure database	2.1 Utilise database (DBMS) tools and design structures to minimise i/o contention according to task requirements 2.2 Apply database backup procedures according to method of data storage 2.3 Reconfigure rollback segments according to task requirements 2.4 Configure database and test performance according to task requirements
3. Optimise the database	3.1 Track module performance according to specifications 3.2 Monitor and tune efficiency of structured query language (SQL) according to task requirements 3.3 Monitor and measure performance of shared pool, blocks and buffers 3.4 Detect, identify and resolve contentions that arise in real-time operation of database 3.5 Reconfigure database according to specifications

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Oral communication	• Uses effective listening and questioning techniques to confirm requirements and information using relevant industry for intended audience
Reading	• Demonstrates analysis and interpretation of textual information in order to establish performance issues and their corresponding solutions
Writing	• Writes and edits code and technical data in a logical manner using required syntax and language
Planning and organising	• Uses a formal, logical planning processes together with an increasingly intuitive understanding of context • Uses formal, logical process to identify relevant information and risks and to identify and evaluate alternative strategies and resources
Problem solving	• Uses analytical processes to decide on a course of action, establishing criteria for deciding between options
Self-management	• Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information and identifying and evaluating options against the agreed criteria

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SKILL	DESCRIPTION
Technology	• Uses familiar digital technologies and systems to access information, search and enter data, code, present information and communicate with others, while maintaining data security and safety at all times

Unit Mapping Information

Supersedes and is equivalent to ICTDBS404 Identify and resolve common database performance problems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTDBS417 Identify and resolve common database performance problems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- configure an optimal performance database with at least three tables for at least one occasion
- confirm at least two of the three tables have greater than one hundred rows.

In the course of the above, the candidate must:

- identify common database problems
- determine required solutions to solve problem
- implement solutions to improve database performance
- save and back up work.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- database design and structured query language (SQL)
- database administration procedures
- tools and database tuning methodologies.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- industry software packages
- diagnostic tools

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- database operating on a network environment or virtual network environment.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTDBS418 Monitor and administer databases

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to monitor and manage databases including selecting the required database according to organisational requirements. It involves the operation, testing, monitoring and maintenance of a database, in accordance with organisational requirements.

It applies to individuals employed as database support staff who are required to maintain a database, monitor its performance as well as access and administer its security and varying levels of access to users.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Database

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Select and start database	1.1 Identify and select database according to organisational requirements 1.2 Configure database system start-up according to organisational requirements and required vendor guidelines 1.3 Monitor database start-up and operation and check for irregularities according to task requirements
2. Administer database	2.1 Create and document data dictionary and implement data structures according to task requirements 2.2 Maintain data integrity constraints according to organisational

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ELEMENT	PERFORMANCE CRITERIA
	requirements 2.3 Create and design indexes, locking options and multiple-field keys according to organisational requirements 2.4 Confirm database backups have been stored and can be accessed by required personnel 2.5 Monitor and update ongoing viability of data storage and resize according to organisational requirements
3. Manage database access	3.1 Allocate and remove access privileges according to user status and organisational requirements 3.2 Monitor network server log-in log file and prevent illegal log-in attempts and security breaches according to organisational policies and procedures 3.3 Manage system and database administration resources according to task requirements
4. Record and store database maintenance tasks	4.1 Document changes to database processes and start-up procedures according to organisational requirements 4.2 Itemise database management structures and file access authorisations 4.3 Detail required log file monitoring procedures 4.4 Record the procedures to manage systems resources 4.5 Save, back-up and close documentation and database resources

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Oral communication	• Uses active listening and questioning skills to confirm information and task requirements
Reading	• Analyses textual information to determine start-up and operation irregularities
Writing	• Prepares required technical and business documentation conveying changes to database processes and start-up procedures using detailed language
Teamwork	• Requests feedback and provides feedback to others in order to improve self or workgroup behaviors • Demonstrates professional and respectful behavior with team members and supervisors

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SKILL	DESCRIPTION
Planning and organising	• Responds to stated goals during compilation of data dictionary and data structures, and when managing a database, according to business requirements, including deadlines • Uses a formal decision-making process, setting or clarifying goals, gathering information, and identifying, and evaluating several choices against a limited set of criteria and deadlines
Self-management	• Identifies and adheres to organisational requirements and vendor guidelines
Technology	• Demonstrates interpretation of key principles and concepts underpinning the design, and operation of digital systems and tools

Unit Mapping Information

Supersedes and is equivalent to ICTDBS409 Monitor and administer a database.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTDBS418 Monitor and administer databases

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- configure, monitor, update and manage a database with at least three tables.

In the course of the above, the candidate must:

- confirm data integrity
- monitor data storage requirements
- modify data access privileges
- document and save work.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- backup and recovery methodologies and procedures
- principles of relational database design
- database security concepts
- organisational procedures referring to database processes and start-up procedures
- database server management tools
- structured query language (SQL) principles
- database administration tasks and procedures
- database processes, procedures and concepts of organisations and a vendor.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

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This includes access to:

- industry standard relational database management system
- an operational database requiring authenticated and authorised access, hosted in a network environment or virtual network environment.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTDBS505 Monitor and improve knowledge management systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to create improvements to knowledge management systems, as well as distribute and monitor them.

It applies to those who are employed as database or systems administrators and are required to support and maintain existing knowledge management systems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Database

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to improve knowledge management system	1.1 Identify and document structure and operation of existing organisational knowledge management system 1.2 Determine organisational knowledge management system information requirements 1.3 Determine and document required information structure
2. Create knowledge management system improvements	2.1 Collate all required information from information repositories on the knowledge management system 2.2 Organise information according to organisational requirements 2.3 Determine and document information structure improvement plan according to organisational requirements

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ELEMENT	PERFORMANCE CRITERIA
3. Distribute and monitor knowledge management system documentation	3.1 Distribute knowledge management system documentation to required personnel 3.2 Seek and respond to feedback from required personnel 3.3 Analyse use of knowledge management system and determine its effectiveness against organisational requirements 3.4 Implement required process improvements and confirm organisational requirements are met 3.5 Obtain final task sign off from required personnel

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Oral communication	• Uses listening and questioning techniques to articulate information and requirements using detailed language
Reading	• Recognises and interprets textual information to determine client information requirements
Writing	• Prepares documentation detailing gathered information and proposed improvements using instructional language
Teamwork	• Participates in complex formal and informal conversations relevant to own role, initiating and taking the lead where appropriate in the context of gathering information and feedback from the client and staff
Planning and organising	• Takes responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others
Problem solving	• Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information, and identifying and evaluating options against the agreed criteria
Technology	• Identifies key principles and concepts underpinning the design and operation of digital systems and tools

Unit Mapping Information

Supersedes and is equivalent to ICTDBS501 Monitor and improve knowledge management system.

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Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTDBS505 Monitor and improve knowledge management systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- monitor and implement at least three improvements to an existing knowledge management system.

In the course of the above, the candidate must:

- define success metrics
- track, document and define improvements made.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- practices for information management within an organisation
- information sources available within an organisation
- industry standard knowledge management systems
- database structures and their construction
- procedures for monitoring and reviewing knowledge managements systems.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- industry software packages
- organisational databases
- information requirements

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- information repositories
- industry standard knowledge management systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTDBS506 Design databases

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to establish client needs and technical requirements and to design a database that meets identified requirements.

It applies to those who are employed in roles including database administrators or designers who are required to design databases.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Database

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine database requirements	1.1 Conduct user-needs analysis with required personnel and determine database functionality requirements 1.2 Determine user-needs analysis technical requirements 1.3 Develop conceptual model of database according to organisational requirements 1.4 Submit conceptual model to required personnel 1.5 Seek and respond to feedback and make required changes
2. Develop logical data model	2.1 Identify attributes and determine data types 2.2 Undertake normalisation of attributes 2.3 Develop entity-relationship (ER) diagram and clarify cardinality of relationships

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ELEMENT	PERFORMANCE CRITERIA
	2.4 Document attributes, normalised data and ER diagram 2.5 Submit documentation to required personnel and seek and respond to feedback
3. Design data structures	3.1 Confirm primary and foreign keys according to technical requirements 3.2 Identify referential integrity constraints and organisational business rules 3.3 Establish database management system constraints and incorporate into database design 3.4 Design and develop data validation rules, indexes and data dictionary 3.5 Document database design according to organisational policies and procedures
4. Design queries, screens and reports	4.1 Design database according to organisational requirements 4.2 Design required queries and output reports 4.3 Compare physical design against conceptual model and user-needs analysis 4.4 Incorporate all required changes into database design
5. Design access and security systems	5.1 Review existing business security plan and use as design base 5.2 Design database password and access system 5.3 Identify multiple-user requirements 5.4 Develop required organisational access profiles
6. Confirm database design	6.1 Determine database backup and recovery requirements 6.2 Develop and document database backup and restore procedures 6.3 Submit database and documentation to required personnel 6.4 Seek and respond to feedback from required personnel 6.5 Obtain final task sign off from required personnel

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Numeracy	• Makes measurements and performs calculations for work layout, determine field lengths and table size and estimate database size

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SKILL	DESCRIPTION
Oral communication	• Uses listening and questioning techniques to confirm information and requirements using industry language for intended audience
Reading	• Interprets textual information obtained from a range of sources and determines how content may be applied to requirements
Writing	• Develops documentation detailing data model and design using appropriate structure, layout and specialised technical and programming language
Planning and organising	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context to identify relevant information and risks, identify and evaluate alternative strategies and resources
Problem solving	• Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information, and identifying and evaluating options against the agreed criteria
Technology	• Identifies key principles and concepts underpinning the design, and operation, of digital systems and tools

Unit Mapping Information

Supersedes and is equivalent to ICTDBS502 Design a database.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTDBS506 Design databases

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design, develop and implement a simple database on at least one occasion.

In the course of the above, the candidate must:

- document the database requirements, design plan and procedures.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- process for conducting data analysis, data types and data structures, query and report design
- data modelling procedures related to conceptual data model development
- data redundancy identification methodologies
- database management system (DBMS) design phase fundamentals
- encryption and authentication database security features
- functions and features of data types and data structures, and of databases
- logical design concepts, including those for data structures, queries screens and reports
- object model design concepts, including those for data structures, queries, screens and reports
- database scalability.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- industry standard equipment and materials

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- industry standard database software
- network and other systems required for remote or multi-user access
- organisational requirements and deliverables
- computer-aided software engineering (CASE) or diagramming software.

Links

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ICTDBS507 Integrate databases with websites

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to integrate a database with a website.

It applies to those employed as web software and database developers and responsible for creating data-driven web applications.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Database

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1.Prepare to connect database	1.1 Determine organisational and user input database data requirements 1.2 Identify technical upgrades and requirements 1.3 Determine and document database integration plan according to organisational requirements 1.4 Submit documentation to required personnel and seek and respond to feedback
2. Connect to the database	2.1 Setup database credentials and establish database connection 2.2 Connect to database from web application using web development language 2.3 Transfer data according to database integration plan2.4 Test database connection according to organisation and technical

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ELEMENT	PERFORMANCE CRITERIA
	requirements
3. Retrieve and display data	3.1 Retrieve data and use structured query language (SQL) 3.2 Display data using required control 3.3 Format data according to organisational requirements
4. Update database data	4.1 Update existing user input data 4.2 Insert data in the database with user-supplied input 4.3 Identify and delete data stored in database 4.4 Validate data and check for errors

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Oral communication	• Articulates requirements and responsibilities clearly and distinctively, using industry standard technical language intended for audience and environment
Reading	• Interprets textual information from the sources in order to identify relevant and key information
Writing	• Writes and edits code and technical data in a logical manner using correct syntax and accuracy
Planning and organising	• Operates from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation, and identifying and addressing issues
Problem solving	• Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information, and identifying, and evaluating options against agreed criteria • Uses analytical processes to decide on a course of action, and establishes the criteria for deciding between different options
Self-management	• Takes full responsibility for identifying and considering relevant organisational protocols and requirements
Technology	• Identifies principles, concepts, language and practices associated with the digital world, and uses these to connect to a database from a web application, retrieving, displaying and updating data

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Unit Mapping Information

Supersedes and is equivalent to ICTDBS504 Integrate database with a website.

Links

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Assessment Requirements for ICTDBS507 Integrate databases with websites

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- integrate, access, connect and update a database on at least one occasion.

In the course of the above, the candidate must:

- retrieve and display web-based data on at least two different browsers.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard database structures
- industry standard internet technology for databases
- database programming control structures, object-oriented programming and database interfaces including:
  - structured query language (SQL)
  - NoSQL programming interfaces
- web programming concepts, including:
  - authentication and web security
  - hypertext transfer protocol (HTTP)
  - session management
  - principles of stateless programming.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

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This includes access to:

- industry standard hardware and software required for database integration activities
- industry standard software packages
- organisational deliverables
- organisational policies and procedures that may impact on database integration activities
- web server
- database
- web development environment
- different browsers.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTDBS604 Build data warehouses

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to design, develop and implement a data warehouse within an organisation.

It applies to those who manage knowledge management teams or work in a team based senior role and has line management responsibility, looking after data warehouses.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Database

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish database design requirements	1.1 Review organisational database design document, data structures, queries, reports and user interface 1.2 Review organisation business security plan and determine level of alignment to organisational requirements 1.3 Identify big data applications 1.4 Determine database technical specifications 1.5 Design and document database according to technical specifications and organisational requirements
2. Identify data and sources	2.1 Identify enterprise's knowledge management strategy data requirements 2.2 Identify subject areas for business processes and data

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ELEMENT	PERFORMANCE CRITERIA
	requirements 2.3 Analyse and document operational data and define warehouse sources 2.4 Develop warehouse source specifications with reference to existing data tables and files
3. Manage warehouse operational steps and processes	3.1 Develop warehouse targets and align to business processes and data requirements 3.2 Identify system configuration warehouse agents 3.3 Determine and document warehouse steps and processes according to organisational requirements
4. Design and develop warehouse features	4.1 Determine and document warehouse user interface 4.2 Develop and implement warehouse security strategy according to organisational security plan 4.3 Identify dimension tables and fact tables 4.4 Determine technology costs for the implementation of warehouse security strategy 4.5 Develop and document warehouse information catalogue according to organisational requirements
5. Test and implement data warehouse	5.1 Test data warehouse against business and align to organisational requirements 5.2 Recommend changes to business processes, according to compatibility with the data warehouse and the knowledge management strategy 5.3 Implement data warehouse according to organisational requirements 5.4 Benchmark and document performance level of data warehouse 5.5 Develop and document maintenance schedule according to organisational requirements 5.6 Submit all documentation to required personnel

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Learning	• Monitors outcomes of decisions, considering results and identifying key concepts and principles that may be adaptable in the future

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SKILL	DESCRIPTION
Numeracy	• Uses relevant information in completing cost benefit analyses
Oral communication	• Uses listening, questioning and summarising techniques to identify needs and articulate complex concepts
Reading	• Interprets the textual information obtained from a range of sources, and determines how the content may be applied to the requirements
Writing	• Develops documentation detailing plans and processes using appropriate structure, layout and technical programming language
Planning and organising	• Develops plans to manage relatively complex, non-routine tasks, with an awareness of how they may contribute to longer-term operational and strategic goals
Problem solving	• Develops and implements strategies that ensure that the organisational policies, procedures and regulatory requirements are being met • Makes a range of critical and non-critical decisions in relatively complex situations, taking a range of constraints into account • Uses systematic, analytical processes in complex non-routine situations, setting goals, gathering relevant information, and identifying and evaluating options, against the agreed criteria • Uses a systematic process to identify possible solutions to a difficult problem
Self-management	• Works autonomously, making high-level decisions to achieve, and improve, organisational goals • Takes a lead role in the development of organisational goals, roles and responsibilities • Monitors and reviews the organisation’s policies, procedures, and adherence to legislative requirements, in order to implement and manage change
Technology	• Identifies principles, concepts, language and practices associated with the digital world, and uses these to build a data warehouse

Unit Mapping Information

Supersedes and is equivalent to ICTDBS601 Build a data warehouse.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTDBS604 Build data warehouses

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design, develop, test and implement a medium sized data warehouse.

In the course of the above, the candidate must:

- document plans and processes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- business operating systems related to data sources
- database management system (DBMS) fundamentals, including data extraction facilitation
- decision-support systems and knowledge management strategies
- database encryption and authentication security features
- functions and features of dimension tables and fact tables
- process for the installation and use of proprietary software
- logical database model knowledge required to facilitate data extraction
- relationship between databases and data warehouses
- levels of technical documentation required for newly developed data management systems.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- industry standard hardware and software

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- industry standard software packages
- data in a DBMS
- data-warehousing tools
- organisational documents, policies and procedures relevant to building a database.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTDBS605 Develop knowledge management strategies

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to develop knowledge management strategies for an organisation. It includes analysing existing systems, determining requirements, and developing a strategy to meet those requirements.

It applies to those who manage a knowledge management team, or who are working as a senior IT professional with line management responsibilities or similar.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Database

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Analyse existing knowledge management arrangements	1.1 Identify existing arrangements for capture and use of internal and external sources of knowledge and information 1.2 Determine organisational knowledge management concept requirements 1.3 Evaluate alignment of existing procedures and systems against organisational requirements 1.4 Determine and document knowledge management improvement and upgrade requirements
2. Evaluate knowledge management options	2.1 Investigate industry methods for capturing and using knowledge 2.2 Determine and document organisational benefit of industry

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ELEMENT	PERFORMANCE CRITERIA
	standard knowledge management software 2.3 Investigate knowledge managements incentives and reward systems 2.4 Determine non-technical knowledge database maintenance and access requirements
3. Develop knowledge management strategy	3.1 Design and document knowledge management executive and user strategy and support processes according to organisational requirements 3.2 Determine and document implementation strategy technology requirements costs 3.3 Determine and document required periodic review processes 3.4 Submit documentation to required personnel 3.5 Seek and respond to feedback and obtain final task sign off from required personnel

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Numeracy	• Uses mathematical formulas and calculations to perform a cost-benefit analysis
Oral communication	• Uses listening, questioning and summarising techniques to identify needs and articulate complex concepts
Reading	• Interprets textual information obtained from a range of sources, and determines how this content may be applied to requirements
Writing	• Develops documentation detailing requirements, strategy and implementation plan using appropriate structure, layout and technical programming language
Teamwork	• Uses analytical processes to decide on a course of action, establishing criteria for deciding between options, and seeking input and advice from others before acting
Planning and organising	• Operates from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation, and identifying and addressing issues
Problem solving	• Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information, and identifying and evaluating options against agreed criteria

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SKILL	DESCRIPTION
Self-management	• Uses a mix of intuitive and formal processes to identify key information and issues, evaluate alternative strategies, anticipate consequences, and consider implementation issues and contingencies
Technology	• Experiments with the possibilities of new systems, devices, and applications before conducting a more sophisticated analysis of benefits, costs and risks

Unit Mapping Information

Supersedes and is equivalent to ICTDBS602 Develop a knowledge management strategy.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTDBS605 Develop knowledge management strategies

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop a complex knowledge management strategy on at least one occasion.

In the course of the above, the candidate must:

- document processes and outcomes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard knowledge management in contemporary organisations
- differentiated impacts of organisational culture and traditional business models
- database design concepts
- internal and external information sources
- legal, ethical and security issues relating to knowledge management
- records management principles
- required government legislation that may affect business operation, including:
  - workplace health and safety (WHS) policy
  - environmental issues
  - equal opportunity
  - industrial relations
  - anti-discrimination
- organisational structures and business goals.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- industry standard equipment and materials
- industry standard software packages
- sample organisations suitable for the implementation of knowledge management
- organisational deliverables and requirements.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTDBS606 Determine database functionality and scalability

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to identify and determine use of industry standard business requirements for a database.

It applies to those in senior system-operations, senior database managers or line manager roles.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Database

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine database requirements	1.1 Determine organisational database outcome requirements and database problem from organisational specifications 1.2 Analyse existing database and identify business rules, entities and relationships 1.3 Identify existing and proposed organisational business models 1.4 Identify required big data applications
2. Determine database functionality	2.1 Document existing database and environment according to organisational requirements 2.2 Identify and document database functionality requirements
3. Identify scalability and	3.1 Identify reserve and long-term capacity of the database

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ELEMENT	PERFORMANCE CRITERIA
functionality	3.2 Identify implications of systems architecture, data models, data structures, hardware and software 3.3 Identify organisation and user requirements for scalability 3.4 Compare and document functionality and scalability features of database
4. Prepare database functionality and scalability report	4.1 Document functionality and scalability of database according to organisational requirements 4.2 Submit finalised document to required personnel and seek and respond to feedback 4.3 Obtain final task sign off from required personnel

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Learning	• Gathers and analyses data, and seeks feedback, to improve plans and processes • Explores and incubates new and innovative ideas through unconstrained analysis, and critical thinking, to develop and improve the organisation's goals
Oral communication	• Uses listening and questioning techniques and effective mode of communication to articulate complex concepts and requirements using industry language for intended audience
Reading	• Critically analyses complex documentation from a variety of sources, and consolidates information relating to specific criteria, to determine the requirements
Writing	• Develops documentation detailing database functionality and scalability system, business expectations and requirements using appropriate structure, layout and technical programming language
Planning and organising	• Plans strategic priorities and outcomes within a flexible, efficient and effective context, in a diverse environment exposed to competing demands
Problem solving	• Makes high-impact decisions in a complex and diverse environment, using input from a range of sources • Identifies the key factors that impact on decisions and their outcomes, drawing on experience, competing priorities and decision-making strategies, where appropriate

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SKILL	DESCRIPTION
Self-management	• Takes full responsibility for identifying and considering relevant organisational protocols and requirements
Technology	• Uses digital technologies to manage business operations, and actively investigates new technologies for strategic and operational purposes

Unit Mapping Information

Supersedes and is equivalent to ICTDBS603 Determine suitability of database functionality and scalability.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTDBS606 Determine database functionality and scalability

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- determine functionality and scalability of a complex database.

In the course of the above, the candidate must:

- document database functionality and scalability system
- document business expectations and business requirements.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- architecture of database networks
- Australia code of ethics and its relation to the computing industry
- systems hardware related to the client, server and database architecture
- concept of data modelling
- functions and features of databases
- definition of data and implications for database design and functionality.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- industry standard equipment and materials that assist in the determination of suitability of database functionality and scalability

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- industry standard software packages required to determine database functionality and scalability
- industry standard database management system (DBMS)
- industry standard sample database and data.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTDMT404 Create visual design components for digital media

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to create visual design components for media, using industry-standard design tools.

It applies to individuals working in digital media under supervision, in all industries as well as ICT related workplaces who are responsible for producing visual design components for digital media to industry standards. Digital media components in this instance refers to interactive or non-interactive design components for an information technology, digital environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Digital media technologies

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish requirements for visual design components	1.1 Obtain project brief and documents 1.2 Identify visual design components and copyright requirements for digital media according to organisational standards 1.3 Determine design considerations for designing an interactive and non-interactive visual design component, and their purpose 1.4 Define best practice of design principles and elements of good design

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ELEMENT	PERFORMANCE CRITERIA
2. Identify and use software packages for creating visual design media	2.1 Identify and review a range of industry-standard graphics software packages available 2.2 Assess and select suitability of software package against design requirements 2.3 Run graphics software package and become familiar with the interface 2.4 Create new files and naming conventions according to file management and version control procedures 2.5 Apply required tools and features used to create visual design components
3. Create visual design components for visual media	3.1 Develop design ideas and graphic components using creative approaches and principles 3.2 Use graphics software to create visual media and required components 3.3 Identify interactivity of required interactive components 3.4 Communicate and confirm design with required personnel 3.5 Save and back up work
4. Demonstrate, finalise and evaluate design components	4.1 Demonstrate implementation and interactive components to required personnel 4.2 Articulate and justify design choices 4.3 Evaluate usability of design components and interactivity against design brief and intended environment 4.4 Seek and respond to feedback from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Oral Communication	• Articulates complex designs and graphical requirements using listening and questioning techniques to confirm and evaluate design requirements • Responds to feedback and criticism with a professional manner
Reading	• Analyses documentation, images, briefs, instructions, technical and conceptual information from a range of sources, in order to

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	inform the implementation of visual design components for interactive media
Writing	• Records technical information and prepares required documentation according to organisational standards
Teamwork	• Selects and uses conventions and protocols to communicate with co-workers and others in a range of work contexts
Planning and organising	• Takes responsibility for planning and organising own workload
Problem solving	• Analyses available information and makes informed decisions on routine and non-routine tasks
Self-management	• Identifies and implements improvement opportunities
Technology	• Interprets the purposes, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine tasks

Unit Mapping Information

Supersedes and is equivalent to ICTDMT401 Create visual design components for digital media.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTDMT404 Create visual design components for digital media

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design and produce at least one piece of digital media and its components consistent with a design brief.

In the course of the above, the candidate must:

- demonstrate original, innovative approaches to creative development according to design principles and elements
- demonstrate integrity of the design brief against specified requirements
- construct technical specifications for visual design components and overall usability
- confirm copyright and intellectual property legislation and organisational requirements are adhered to
- back up and save work.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- functions, features and uses of graphic software packages and media products, including their purpose, constraints and environments
- technical constraints that hardware imposes on software development, graphics requirements and creative visual design
- techniques for applying concept development skills and visualisation skills
- legislative and organisational requirements, policies and procedures
- design principles, processes, and elements required to create components for digital media.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry or similar.

This includes access to:

- required hardware
- software packages and application, including required digital media tools
- design brief
- file storage devices and systems
- legislative and organisational requirements applicable too creating visual design components.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTDMT405 Produce interactive animations

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the, skills and knowledge required to create interactive animation for a range of applications, including web pages, e-learning, simulations and advertisements.

It applies to individuals who possess a sound knowledge of digital media and provide support within a team and are independently responsible for the design and development of animations in multiple environments, including graphic design, software, application and website design, as well as multi-media projects.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Digital media technologies

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Analyse project requirements	1.1 Determine task requirements for dynamic functionality of animation 1.2 Determine required language to achieve functionality 1.3 Determine and evaluate current requirements for specified application
2. Design animations	2.1 Design animation according to task requirements 2.2 Design animation to meet specifications of sound and interactive functions 2.3 Design animation that enhances the purpose, clarity or useability according to intended audience and context of

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ELEMENT	PERFORMANCE CRITERIA
	animation 2.4 Confirm design specifications with required personnel
3. Produce animations	3.1 Create animation according to task requirements 3.2 Research and experiment with a range of animation techniques to enhance user experience 3.3 Test and debug scripts and demonstrate required functionality 3.4 Test and debug scripts on different browsers, operating systems and devices
4. Publish animations	4.1 Publish animation in an acceptable format 4.2 Incorporate animations on required platform or location, including hypertext markup language (HTML) page, application or software 4.3 Document work and confirm function with appropriate personnel 4.4 Save and back up work

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Oral Communication	• Uses listening and questioning techniques to confirm requirements and articulate complex concepts and matters using relevant industry for intended audience
Reading	• Researches technical and conceptual information from a range of sources to identify and evaluate appropriate design elements and animation techniques for a specific audience
Writing	• Prepares complex documentation design and work performed using applicable language, layout, format and structure for a specific audience
Teamwork	• Selects and uses appropriate conventions, and protocols, when communicating with co-workers and others in a range of work contexts
Planning and organising	• Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others taking into account capabilities, efficiencies and effectiveness • Uses a logical sequence of steps to identify and solve functional problems relating to animation

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Problem solving	• Addresses less predictable problems and applies problem-solving processes in determining a solution • Uses a logical sequence of steps to identify and solve functional problems relating to animation
Self-management	• Makes routine decisions and implements standard procedures for routine tasks, using formal decision-making processes for more complex and non-routine situations
Technology	• Interprets the purposes, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine tasks

Unit Mapping Information

Supersedes and is equivalent to ICTDMT402 Produce interactive animation.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTDMT405 Produce interactive animations

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design and create at least one piece of interactive animation, using different animation techniques
- publish animation on at least one accessible location, including a website, application or shared software
- test, debug and fix code and useability errors on at least 4 different browsers (if publishing on a website), and on at least 2 different devices.

In the course of the above, the candidate must:

- following industry standards and procedures
- confirm, document and save work.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- internet technology used to inform choice of scripting type
- principles of analysis and design that may be used in the process of producing interactive animations
- programming control structures including buttons and scripting language
- animation programming concepts, including:
  - acceptable formats for importing assets
  - component libraries
  - cross-browser issues
  - importing and exporting libraries

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- inserting published work to a hypertext markup language (HTML) or to an extensible hypertext markup language (XHTML) page
- internet animation player statistics
- masking that may be used in producing interactive animations
- movements and automated movements
- publishing finished work in applicable web format
- shape animation, manipulation, symbols, text manipulation and transparencies
- testing and debugging script techniques
- version control techniques and file naming standards.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- animation tools, equipment and materials
- industry software packages
- the internet and browser access
- storage device or cloud system
- electronic devices, including
  - a personal computer (PC)
  - a smartphone device
  - tablet.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTDMT406 Produce and edit digital images

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to produce and edit digital images using a range of digital media technologies.

It applies to individuals who possess knowledge of digital media and technologies and may provide support within a team or be independently responsible for producing editing, enhancing and manipulating digital images in any industry.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Digital media technologies

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare digital imaging work	1.1 Identify type of image required and environmental considerations 1.2 Identify and address intellectual property requirements 1.3 Determine image capturing device and imaging software requirements 1.4 Prepare plan of digital image capturing steps and equipment according to task requirements 1.5 Set up image capturing device according to task requirements
2. Capture digital image	2.1 Check image capturing device, environmental and other factors are as required and adjust where needed 2.2 Operate image capturing device and capture images according

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ELEMENT	PERFORMANCE CRITERIA
	to manufacturer specifications and task requirements 2.3 Save required and delete non required images according to device specifications
3. Finalise digital image editing task	3.1 Download digital images to digital editing platform and save according to task requirements 3.2 Enhance, crop and alter digital images to task requirements 3.3 Combine and integrate digital images into required designated interactive sequence 3.4 Submit digital images to required personnel and seek feedback 3.5 Respond to feedback and obtain final sign off from required personnel

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Description
Numeracy	• Demonstrates an understanding of numeracy to identify required technical specifications to achieve the desired digital image outcomes • Uses a combination of both formal and informal mathematical language involving knowledge of unity, scale, perspective and balance when considering creating graphics
Oral communication	• Uses listening and questioning techniques to confirm task requirements and articulate information using relevant industry for intended audience
Reading	• Interprets and analyses complex information in a range of texts and critically evaluates numerical and textual information • Identifies compatibility and compares technical specifications and solutions to new and emerging issues
Planning and organising	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for required outcomes
Problem solving	• Demonstrates an understanding of how to address less predictable problems and initiates standard procedures in response • Applies problem-solving processes in determining a solution
Self-management	• Implements standard procedures and makes decisions for routine tasks • Uses formal decision-making processes for more complex and

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Skill	Description
	non-routine situations
Technology	• Demonstrates an understanding of purposes, functions and key features of digital systems and tools, and operates them to complete routine tasks

Unit Mapping Information

Supersedes and is equivalent to ICTDMT403 Produce and edit digital images.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTDMT406 Produce and edit digital images

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify, edit and sequence at least three digitally captured images using each of the following types of image capturing devices on at least one occasion, including:
  - mobile phone devices
  - smart devices
  - digital SLR.

In the course of the above, the candidate must:

- demonstrate the operation of a digital camera in order to capture a range of images
- assemble required tools and procedures required to produce digital images
- demonstrate using digital imaging software to prepare high quality digital images that satisfy a range of customer and business requirements
- apply copyright and IP requirements.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- functions and features of a range of delivery platforms
- digital photographic techniques
- principles of communication through visual design
- implications of technology connectivity
- work health and safety (WHS) requirements for use of cameras, and computers, and handling and disposing of lithium batteries
- procedures for customer and business liaison
- copyright and intellectual property legislation, policies and procedures

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- industry standards relevant to digital images.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- special purpose tools and equipment
- materials and industry software packages
- image capturing equipment including:
  - digital camera
  - mobile phone device with image capturing capacity
  - smart device with image capturing capacity
  - digital SLR
- industry standard graphics software
- copyright information.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTDRE301 Install digital reception equipment

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to install and configure digital reception equipment (DRE) on a customer's premises.

It applies to individuals who install and maintain DRE in home or small business networks, and includes integration of many services such as broadband, digital TV, free to air (FTA), subscription TV (pay TV) and internet protocol TV (IPTV).

This unit should only be undertaken by experienced cablers to enhance their cabling skills.

No licensing, legislative or certification requirements apply at the time of publication.

Unit Sector

Telecommunications – Digital Reception Technology

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for installation	1.1 Obtain relevant legislation, codes, regulations and standards for compliance when conducting work 1.2 Notify customer to verify installation order and arrange for site access to comply with security arrangements

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ELEMENT	PERFORMANCE CRITERIA
	1.3 Notify supervisor of identified safety hazards at the worksite and complete a job safety analysis (JSA) before commencing work 1.4 Confirm location of digital reception equipment and fittings with customer 1.5 Identify barriers to installation and develop strategies to overcome them within time and budget restrictions 1.6 Select and obtain tools and materials appropriate for the work order
2. Install hardware and equipment	2.1 Measure signal level at wall plate to ensure received signal strength is adequate 2.2 Test customer's existing equipment for operational condition and reception quality 2.3 Notify customer of detected problems and record remedial actions if required 2.4 Identify interconnection cabling requirements and prepare cables for job requirements 2.5 Affix wall plate to agreed position on wall and secure cable according to specification 2.6 Connect set top unit to customer equipment and connect cabling between wall plate and set top unit following work health and safety (WHS) and environmental requirements 2.7 Power up set top unit and configure it to customer requirements 2.8 Activate customer services to complete hardware installation where required
3. Commission and test installation	3.1 Conduct functional test to assess transmission signal quality 3.2 Conduct tests to ensure quality of all services are being delivered against enterprise quality standards 3.3 Check all interconnected equipment is functional
4. Finalise installation and handover to customer	4.1 Restore site to original condition and customer satisfaction 4.2 Assess damages that may have occurred during installation and arrange with customer for repair or replacement of damaged components 4.3 Remove waste and debris from site and dispose of in a safe and environmentally appropriate manner 4.4 Conduct customer training appropriate to equipment, services and vendor literature

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ELEMENT	PERFORMANCE CRITERIA
5. Complete contract documentation	5.1 Provide warranties to customer in required format where work and equipment are subject to warranty 5.2 Prepare invoices and other financial documentation, where required, and present to customer 5.3 Obtain authorised signatures on required documentation to confirm acceptance of completed work

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	• Interprets textual information from relevant sources to identify key information
Writing	• Uses clear, specific and industry-related terminology to complete workplace documentation
Oral Communication	• Articulates clearly using appropriate language for environment and uses listening techniques to confirm understanding
Numeracy	• Takes readings and measurements and interprets results
Navigate the world of work	• Takes responsibility for following safe, sustainable, appropriate and efficient workplace procedures
Interact with others	• Liaises with customer • Signs-off work when completed to customer's satisfaction
Get the work done	• Plans, organises and implements tasks efficiently to meet customer requirements • Resolves any problems arising from installation

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status

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Code and title current version	Code and title previous version	Comments	Equivalence status
ICTDRE301 Install digital reception equipment (Release 2)	ICTDRE301 Install digital reception equipment (Release 1)	Updates to application and knowledge evidence. Updates to template to apply consistent format between units.	Equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTDRE301 Install digital reception equipment

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify installation requirements and obtain required approvals
- install equipment applying work health and safety (WHS) requirements and work practices
- configure set equipment to customer requirements
- conduct functionality tests and interpret results
- provide customer training appropriate to equipment
- complete task and handover to customer.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- a range of products used across the industry
- contemporary equipment and connection methods
- customer service principles, including dealing with customers face to face
- enterprise or service specific knowledge of products and services supplied
- work health and safety general principles and enterprise specific job safety analysis (JSA) requirements
- an overview of:

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  - methods of training customer in product use
  - radio frequency (RF) theory, principles and safety
  - telephony principles to support return path awareness
- pre-installation enterprise specific requirements
- enterprise quality assurance requirements
- return path technology
- technology on customer premises
- test results
- reception issues.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- site for digital reception equipment installation
- digital reception equipment currently used in industry
- test equipment required for digital reception equipment installation and testing.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTDRE308 Install a cable broadband multi-dwelling unit system

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Release 5.0.

Application

This unit describes the skills and knowledge required to install, test and commission a cable broadband system within a multi-dwelling unit (MDU).

It applies to technicians who conduct cable broadband installation and service assurance activities within commercial or MDU environments.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Digital Reception Technology

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan installation of a broadband service to an end user within an MDU	1.1 Notify customer to arrange access to site and identify customer equipment 1.2 Assess existing design, infrastructure and constraints on installation according to enterprise requirements and customer specifications 1.3 Complete a job safety and environmental analysis (JSEA) by identifying work health and safety (WHS) issues 1.4 Prepare for installation according to relevant legislation, regulations, codes and standards
2. Assemble equipment	2.1 Select and obtain materials, tools and equipment for installation

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ELEMENT	PERFORMANCE CRITERIA
and tools for installation	2.2 Identify cable access and select suitable cable pathway 2.3 Install cable according to enterprise design requirements 2.4 Install equipment and devices to operate according to design and manufacturer specifications 2.5 Terminate cables according to design and manufacturer specifications
3. Test and commission system	3.1 Conduct proof of performance testing at required specified locations according to commissioning documentation 3.2 Conduct radio frequency (RF) signal measurement using test equipment 3.3 Record and analyse initial test results for quality of service according to design specifications 3.4 Rectify identified faults and adjust system for optimal operation 3.5 Conduct final RF signal measurement using test equipment to optimise performance
4. Complete administrative tasks	4.1 Record final RF test results and settings according to enterprise requirements 4.2 Complete appropriate records and file according to enterprise policy and procedures 4.3 Inform customer of work completion and obtain sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Interprets text from relevant sources to identify key information
Writing	• Uses clear, specific and industry related terminology to complete workplace documentation
Oral Communication	• Communicates clearly, using appropriate language for environment and uses listening techniques to confirm understanding
Numeracy	• Obtains readings and measurements and interprets results
Navigate the world of	• Takes responsibility for adhering to safe, sustainable, appropriate and efficient workplace procedures

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work	
Interact with others	• Communicates effectively with customers, stakeholders and -team members
Get the work done	• Plans, organises and implements tasks efficiently to meet customer requirements • Identifies and resolves problems

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTDRE308 Install a cable broadband multi-dwelling unit system

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Release 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- obtain relevant approvals for access to site and equipment
- plan, assemble and install equipment
- interpret results
- action test results to align with enterprise requirements
- perform handover with customer
- apply related work health and safety (WHS) requirements and work practices.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- legislation, regulations and codes relevant to installation of broadband systems
- procedures and equipment required for measuring:
  - radio frequency (RF) signal power forward and return
  - insertion loss
  - distance to fault
  - modulation error rate (MER) and bit error rate (BER) for purpose of signal integrity
- features of instruments, test equipment and performance requirements
- RF testing of radio communications instruments and equipment
- typical issues and challenges that occur in telecommunications broadband installations
- safety issues regarding electromagnetic radiation (EMR).

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Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s where broadband multi-dwelling unit (MDU) system installation can be undertaken
- hybrid fibre coaxial (HFC) equipment and devices currently used in industry
- test equipment required for HFC broadband installation and testing.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTDRE314 Design communications wiring systems for customer premises

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to design a smart cable wiring system on customer premises.

It applies to individuals employed in a technical capacity for the emerging information technologies and applications in domestic and small to medium enterprises.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Pre-requisite Unit

ICTCBL247 Install, maintain and modify customer premises communications cabling: ACMA Open Rule

Unit Sector

Telecommunications – Digital Reception Technology

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to design a wiring system for premises	1.1 Consult customer and visit worksite to determine immediate and future functional needs of the cabling system 1.2 Identify and document immediate and future location of cabling system customer interface elements, and seek confirmation from

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ELEMENT	PERFORMANCE CRITERIA
	appropriate persons 1.3 Review technology used to deliver functional needs 1.4 Identify specific service provider requirements and requirements of applicable standards, codes and regulations
2. Design a wiring system for premises	2.1 Follow work health and safety (WHS) procedures when carrying out work 2.2 Transfer functional needs of customer to architectural plans 2.3 Determine size and location of home distributor, security system, carrier and carriage service facilities, antennas and switch boards 2.4 Identify cable pathways and cable support systems 2.5 Select appropriate cable types to meet functional needs 2.6 Develop cable identification method to aid installation
3. Document cable wiring system design	3.1 Document customer interface elements room by room 3.2 Document requirements for home distributor, security system, carrier and carriage service facilities, antennas and switch boards 3.3 Document testing and commissioning requirements 3.4 Specify user documentation required after completion of installation 3.5 Provide customer quote that includes a bill of materials and a project schedule

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Reads and interprets plans, specifications and other documentation from a variety of sources and consolidates information to determine requirements • Analyses and consolidates test results and data from a range of sources, against defined criteria and requirements
Writing	• Develops procedural material for a specific audience using clear and detailed language to convey explicit information, requirements and recommendations • Produces plans and specifications to industry standards conveying design function and operation

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Skill	Description
Oral Communication	• Effectively participates in verbal exchanges using collaborative and inclusive techniques including active listening and questioning and reading of verbal and non-verbal signals to convey and clarify information
Numeracy	• Makes calculations appropriate for measuring and estimating materials and costing • Performs mathematical calculations to establish scale and dimensions of design plans
Navigate the world of work	• Accepts responsibility and ownership for tasks and makes decisions on completion parameters and need for coordination with others • Explores and implements, where identified, implicit expectations of policies, procedures and regulatory requirements
Interact with others	• Identifies and takes steps to follow accepted communication practices and protocols • Recognises common cultural and other differences of people in the work context and makes adjustments in addressing differences
Get the work done	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency, and effective outcomes • Makes routine decisions and implements standard procedures for routine tasks, using formal decision-making processes for more complex and non-routine situations • Identifies ideas for applications and considers them in current contexts

Unit Mapping Information

ICTDRE314 Design communications wiring systems for customer premises supersedes and is equivalent to ICTDRE304 Design communications wiring systems for customer premises.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTDRE314 Design communications wiring systems for customer premises

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- capture customer functional needs for wiring system
- apply industry standards, regulations and codes of practice when designing a wiring system for a customer
- develop a detailed design in compliance with industry practices, including signal losses and/or expected measurements to be achieved at wall plates
- document the design, including a bill of materials, schedule of work and associated costs and submit to customer.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- cabling standards, regulations and codes applicable to cable design
- building regulations that apply to installation of cabling systems
- codes of practice and Australian Communications and Media Authority (ACMA) standards for home wiring
- carrier network delivery systems used in single dwelling and multi-dwelling units for:
  - fibre
  - fixed wireless
  - satellite
  - twisted copper pair
  - subscription TV

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- cabling requirements of home technology applications taking into account:
  - the user needs including age and assisted living conditions
  - communications
  - digital home health
  - energy management
  - entertainment
  - intelligent light and power
  - security and safety
- testing and commissioning methods and determine performance requirements for home technologies
- customer interface elements commonly considered when designing a wiring system
- common service providers clients may specify
- safety implications of the design for users
- design parameters for cable selection and support system of a wiring system
- documentation required when submitting a design to a customer.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the Telecommunications – Digital Reception Technology industry and include access to:

- a contemporary dwelling design
- a specification of a customer's functional requirements
- current standards, codes of practice and regulations.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM420 Produce interactive games

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to produce interactive games using an industry standard authoring tool.

It applies to individuals who work in the game development industry and support the design, development and programming of basic digital games as part of a larger development team.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify game requirements and component assets	1.1 Obtain project brief and documents 1.2 Identify industry standards and organisational guidelines applicable to game production 1.3 Identify technical specifications and game-production assets needed according to creative and production requirements 1.4 Discuss and evaluate asset formats and issues of asset integration with required personnel 1.5 Select and save all digital assets in required format and store according to organisational procedures 1.6 Determine development sequence of a beta version prototype

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ELEMENT	PERFORMANCE CRITERIA
	1.7 Create a production and testing schedule according to organisational procedures 1.8 Determine strategies in monitoring production progress against schedule
2. Identify, evaluate and select game-engine software and tools	2.1 Identify and review a range of industry standard game-engine software and development tools available 2.2 Assess and evaluate game-engine software and tools applicable to specified game concepts and play requirements with required personnel 2.3 Select the game-engine software and tools according to game and production requirements
3. Create a game-play sequence and prototype using game-engine software	3.1 Load a game engine including sound and game play 3.2 Create and name a new file according to specified task 3.3 Display and use software tools and features required in game production process 3.4 Achieve a unique function using a custom created code 3.5 Import and assemble game-play assets in required sequence, according to creative and technical requirements 3.6 Create and check game-play elements according to creative and technical requirements 3.7 Test and run game-play sequence as a presentation and confirm sequence meets creative, production and technical requirements 3.8 Export to game engine and create a prototype 3.9 Save in required file formats according to organisational procedures
4. Evaluate and reiterate game prototype	4.1 Demonstrate and present initial prototype to required personnel 4.2 Evaluate against criteria including achievement of a creative and user-friendly product 4.3 Discuss and agree on required changes and amend prototype accordingly 4.4 Assist in tests and user trials 4.5 Evaluate feedback from user trials 4.6 Confirm endorsement from required personnel to develop the prototype into a complete product

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ELEMENT	PERFORMANCE CRITERIA
5. Transform prototype into a final proof-of-concept prototype	5.1 Make required changes as indicated by user trials and develop prototype into complete product 5.2 Integrate all game elements as required by specifications 5.3 Review and perform final checks, confirming all sequences conform to the navigation design 5.4 Save into specified storage systems according to organisational procedures 5.5 Obtain final sign-off from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Uses positive and negative whole numbers, decimals, degrees and percentages when setting measurement, scale, coordinates, colour, shading, timing and other parameters in development of interactive games
Oral communication	• Uses listening and questioning techniques to elicit views, obtain information and presenting solutions using industry language for intended audience
Reading	• Interprets and comprehends information in diagrams, storyboards, objects and images and identifies required software, resources, assets and user needs • Identifies signs, symbols, pictures, jargon, abbreviations, computer generated text, numbers, letters and coding syntax required in operating game engines
Writing	• Prepares documentation expressing strategies and game design using appropriate structure, layout and technical programming language
Teamwork	• Cooperates with others and contributes to work practices where joint outcomes are required
Initiative and enterprise	• Uses creativity and initiative in design
Problem solving	• Assesses, tests and modifies product according to client and technical requirements
Self-management	• Makes routine decisions and implements standard procedures in routine tasks

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SKILL	DESCRIPTION
	• Uses formal decision-making processes in more complex and non-routine situations • Identifies importance of secure information in relation to own work and takes responsibility for data integrity, storage and management
Technology	• Uses digital systems and tools and completes routine tasks

Unit Mapping Information

Supersedes and is equivalent to ICTGAM401 Produce an interactive game.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM420 Produce interactive games

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- create an interactive game using an industry standard game-engine software and development tools.

In the course of the above, the candidate must:

- follow applicable industry standards and organisational guidelines
- apply a variety of strategies in game trialling and testing
- implement game development and production strategies
- maintain the integrity of design brief and game design document
- save final product and obtain sign-off from required personnel.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- basic programming techniques that may be used for interactive game development
- game engine capabilities and constraints
- industry standard game-play hardware and software products
- technical constraints hardware and software impose on design and development
- risk and critical path management, applicable to interactive game development
- game production testing and trialling process
- the process of evaluating game prototypes from technical, design and game play perspectives
- industry standards and organisational guidelines applicable to game production
- game-production assets and issues with asset integration.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- project briefs
- applicable organisational documentation
- game-production assets
- technical specifications
- game production testing and trialling tools
- industry standard game-engine software and development tools
- required industry-standard hardware, software and peripheral devices.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM421 Identify and apply games design and game play principles

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to identify and apply principles of games design and game playing.

It applies to individuals who support the design, development and programming of basic digital games as part of a larger development team in the game development industry.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Analyse and document characteristics of various game genres	1.1 Identify and review game-play elements in various game genres 1.2 Identify objectives of game play in various game genres 1.3 Document findings from game genre analysis
2. Interpret consumer demographics in various games products	2.1 Identify target markets in various types of games 2.2 Interpret choices and patterns of buyers and players 2.3 Review social, emotional and cognitive aspects of contemporary interactive game play
3. Review historical aspects of	3.1 Review and describe history of the games industry

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ELEMENT	PERFORMANCE CRITERIA
game play and game design	3.2 Review game play and design in non-computer-based games 3.3 Identify uses of games in commercial, industrial, education, military training and therapeutic and assessment contexts
4. Identify industry game-design principles	4.1 Research and identify industry game-design principles 4.2 Identify game-design principles in various games
5. Outline development of games	5.1 Identify and outline game design and play strategies 5.2 Outline technical limitations and constraints of industry hardware and software

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Interprets numerical and statistical information applicable to target markets and the games industry
Oral communication	• Uses listening and questioning techniques to obtain required information using appropriate industry language for intended audience
Reading	• Interprets and comprehends technical documentation, specifications, market information, statistics, diagrams, objects and images • Analyses various aspects of game play and game design and identifies target markets and interprets consumer demographics
Writing	• Produces documentation outlining analysis and game design as required using accurate spelling, grammar and specific technical language
Technology	• Uses a range of digitally based technologies and accesses, extracts and shares applicable information

Unit Mapping Information

Supersedes and is equivalent to ICTGAM402 Identify and apply principles of games design and game playing.

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Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM421 Identify and apply games design and game play principles

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify games design and game playing principles in at least two games from at least two different game genres.

In the course of the above, the candidate must:

- determine methodology used
- differentiate game genres and identify differing characteristics
- identify consumer demographic for each game product
- differentiate game design and play principles
- prepare an outline of a game design according to industry and organisational requirements.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- 3-D digital model design techniques
- procedures and processes in game development
- industry standard game-play hardware and software products
- technical constraints hardware and software impose on design and development
- industry and organisational requirements.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

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- the internet
- required hardware and software required in researching games and the games industry.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM422 Create design documents for interactive games

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to create a game concept, develop and document the game specifications.

It applies to individuals who support the design, development and programming of basic digital games and design, develop and use digital media technologies as part of a larger development team.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Research, create and document game concept	1.1 Obtain client brief and identify applicable industry standards 1.2 Research, identify and describe target market, the game genre and its working title according to client brief 1.3 Identify game platform, game engine and operating system according to game requirements 1.4 Prepare initial concept art and establish look and feel of characters, environment and game play according to organisational guidelines 1.5 Document research, ideas and initial concept art according to organisational guidelines
2. Create and document	2.1 Develop storylines and levels

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ELEMENT	PERFORMANCE CRITERIA
game design specifications	2.2 Develop characters and environment artwork 2.3 Identify game-play elements 2.4 Develop graphical user interface (GUI) 2.5 Identify sounds and music applicable to game 2.6 Document game design specifications according to organisational guidelines
3. Create and document technical game specifications	3.1 Determine game mechanics 3.2 Finalise platform, game engine and operating system 3.3 Specify source and purpose of code required including level-specific code 3.4 Determine game physics and artificial intelligence 3.5 Identify sound engineering requirements 3.6 Determine and document game prototype testing procedures
4. Collate game design document	4.1 Define proposed game features in comparison to existing games 4.2 List estimated resources required in game development 4.3 Prepare estimated schedule for game development 4.4 Finalise documentation and collate design information, estimates and proposals into a comprehensive game design document according to organisational guidelines 4.5 Present and obtain sign off on documents to required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Outlines parameters and attributes in a wide range of technical specifications using whole numbers, decimals and percentages • Interprets financial and statistical information and adds, subtracts, multiplies and divides whole numbers and decimals when researching target market and estimating resources and schedules
Oral communication	• Uses listening and questioning techniques to obtain required information and elicit views and opinions of others using appropriate industry language for intended audience
Reading	• Interprets and comprehends technical documentation, financial information and statistical data

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SKILL	DESCRIPTION
	• Investigates target market and identifies applicable resources
Writing	• Prepares documents detailing research and design using appropriate layout and required descriptive language in a cohesive and well-structured manner
Initiative and enterprise	• Uses creativity and initiative in design
Planning and organising	• Takes responsibility in planning, sequencing and prioritising tasks
Self-management	• Makes routine decisions and implements standard procedures in routine tasks • Uses formal decision-making processes in more complex and non-routine situations • Identifies importance of secure information in relation to own work and takes responsibility in data integrity and management
Technology	• Completes routine tasks using specific digital systems, applications and tools

Unit Mapping Information

Supersedes and is equivalent to ICTGAM403 Create design documents for interactive games.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM422 Create design documents for interactive games

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- create and develop game design documents for at least one interactive game according to required industry standard and consistent with client brief and specifications.

In the course of the above, the candidate must:

- develop concept art for characters, environments, splash screens, start screens and game field screens consistent with identified game genre and design specifications
- develop technical specifications in game mechanics, artificial intelligence, physics, sound, game play and overall usability
- include a list of estimated resources required and a game development schedule.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- game development processes
- basic programming techniques that may be used for interactive game development
- industry standard game-play hardware and software products
- technical constraints hardware and software impose on design and development
- techniques in applying concept development and concept visualisation skills
- industry standards applicable to creating and developing game design documentation
- organisational guidelines, documentation techniques and processes that may apply to creating design documents for interactive games.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- the internet
- client brief
- required hardware, software and peripheral devices
- games-engine.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM423 Apply artificial intelligence in game development

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to research, develop and implement artificial intelligence (AI) solutions in games.

It applies to individuals who contribute to the creation of system-controlled objects in games and who support the design, development and programming of basic digital games as part of a larger development team.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Conduct research on AI strategies	1.1 Research and identify terminology involved in AI applicable to games and its industry 1.2 Identify and analyse range of AI path-finding strategies including required genres and environments and how they influence design and development 1.3 Discuss AI strategies and ideas with required personnel 1.4 Organise research and findings during development process and update required personnel 1.5 Identify industry standards applicable to using AI strategies in game development

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ELEMENT	PERFORMANCE CRITERIA
2. Design, implement and test AI game strategy	2.1 Generate a range of goals and actions and other factors in design of an AI non-player character (NPC) 2.2 Select technically feasible AI strategies in designing NPCs according to brief and provide creative solutions to design issues 2.3 Design and customise AI strategy according to client brief and game requirements 2.4 Reflect on and assess implications in AI strategies regarding budget, timeline, technical feasibility and user suitability according to brief 2.5 Implement a path-finding algorithm and a NPI AI strategy in a game 2.6 Test implementation of AI strategy and amend as required
3. Evaluate game and confirm with required personnel	3.1 Review game design and AI strategies and confirm design brief is fulfilled 3.2 Discuss, seek feedback and confirm additional requirements and modifications to game design with required personnel 3.3 Apply required amendments according to discussions with required personnel and feedback 3.4 Obtain final sign-off from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Outlines parameters using whole numbers and decimals • Interprets budgets and adds, subtracts, multiplies and divides whole numbers and decimals and confirms budget, timelines and other brief requirements are met
Oral communication	• Obtains information and facilitates discussions using listening and open questioning techniques and relevant industry language
Reading	• Investigates, interprets and comprehends technical documentation, diagrams, icons, symbols, text, numbers and letters when determining AI strategies
Writing	• Records research findings and documents solutions and process using relevant programming language, and required code layout, code, diagrams and syntax

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SKILL	DESCRIPTION
Initiative and enterprise	• Uses creativity and initiative in design
Self-management	• Makes routine decisions and implements standard procedures in routine tasks • Uses formal decision-making and analytical processes in more complex and non-routine situations
Technology	• Completes routine tasks using specific digital systems and tools

Unit Mapping Information

Supersedes and is equivalent to ICTGAM404 Apply artificial intelligence in game development.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM423 Apply artificial intelligence in game development

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify and analyse at least two artificial intelligence (AI) strategies applicable to a game development brief
- design a feasible AI game strategy
- implement at least two path finding algorithms and at least two non-player character AI strategies in a game.

In the course of the above, the candidate must:

- review and evaluate AI strategies
- comply with industry standards, client brief and game requirements.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- basic path-finding algorithms implications on game development
- major AI terms used in the game industry
- the development process of creating AI strategies in non-player characters (NPCs) in a game
- applying object-oriented programming practices
- overall architecture of a game engine
- game development testing processes
- industry standards applicable to game development.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- the internet
- research tools
- required hardware, software and its component
- path-finding libraries
- game development testing tools
- development tools to implement AI strategies
- game design specifications and documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM424 Develop story and content in digital games

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to identify and develop storylines, write plot synopses and background stories and develop story components for interactive digital games.

It applies to individuals who are game concept developers, script writers, storyboard artists, game designers, technical designers and other IT professionals working in the game development environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and develop storylines with game potential	1.1 Identify potential storylines in game development and applicable industry standards and regulations 1.2 Discuss, modify and enhance storylines with required personnel according to game environment 1.3 Determine applicable game genre 1.4 Establish and document draft storyline according to game requirements 1.5 Confirm storyline complies with copyright and intellectual property protection regulations
2. Write plot synopsis and	2.1 Determine and create character profiles

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ELEMENT	PERFORMANCE CRITERIA
background story	2.2 Develop environment profiles consistent with storyline 2.3 Develop and document background story and initial plot profile 2.4 Write and develop plot synopsis and options and link to specific game levels
3. Develop story components	3.1 Source initial concept artwork according to game environment and specifications 3.2 Develop level specifications and storylines 3.3 Initiate development of storyboards showing plot development, cinematic and level outlines according to organisational procedures
4. Finalise story components and obtain sign-off	4.1 Seek and respond to feedback on story and concept with required personnel and apply required changes 4.2 Finalise story concept, profiles and other specifications according to organisational procedures and game requirements 4.3 Obtain sign-off from required personnel and confirm inclusion of final story components in game design brief

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Oral communication	• Obtains views, information and feedback and presents concepts and storyline using listening, open questioning and other communication techniques
Reading	• Identifies and evaluates a variety of texts in aiding concept development
Writing	• Develops storylines and plot synopses using appropriate layout and required descriptive language in a cohesive and well-structured manner
Initiative and enterprise	• Uses creativity and initiative in the story and visual design
Self-management	• Identifies and complies with industry and regulatory requirements • Makes routine decisions and implements standard procedures in routine tasks • Uses formal decision-making processes in more complex and

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SKILL	DESCRIPTION
	non-routine situations
Technology	• Conducts research, designs work processes and completes work tasks using information and communications technology (ICT) based tools

Unit Mapping Information

Supersedes and is equivalent to ICTGAM405 Write story and content for digital games.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM424 Develop story and content in digital games

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop at least one game storyline according to industry standards.

In the course of the above, the candidate must:

- create character profiles according to game environment and storyline
- write plot synopsis with a supporting background story
- create a storyboard
- comply with copyright and intellectual property protection regulations.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- budgeting and scheduling considerations in game development
- copyright and intellectual property protection regulations applicable to written narrative and concept graphics
- different story requirements in particular game genres
- role of story writing in game development
- research methods used in observing latest changes and narrative development in games
- tools and techniques used in developing game narrative
- organisational procedures that may be used in the development of story and content in digital games.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

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This includes access to:

- a range of industry standard games across all platforms and genres
- a range of industry standard consoles and hand-held game devices
- the internet
- word processing software
- industry standard game development software
- required hardware, software and games engine
- file storage and version control environment
- copyright and intellectual property legislation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM425 Create visual design components in interactive games

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to create visual design components for games and interactive media using industry standard authoring tools.

It applies to individuals who contribute and support the design, development and programming of digital games as part of a larger development team.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify industry standard visual design components in games and interactive media	1.1 Obtain project brief and documents and standards applicable to creating visual design components 1.2 Research and identify features of visual design components in games and interactive media 1.3 Discuss design considerations made in interactive visual design components with required personnel

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ELEMENT	PERFORMANCE CRITERIA
2. Identify, select and use graphics software packages in creating visual design components	2.1 Identify and review range of industry-standard graphics software available 2.2 Assess software applicable to visual design component requirements 2.3 Discuss technical specifications applicable to rendering and editing processes with required personnel 2.4 Select graphics software package according to project brief and visual design component requirements 2.5 Run graphics software and become familiar with interface 2.6 Create and name new files and organise a file structure according to organisational procedures 2.7 Learn tools and features within graphics software package used in creating visual design components
3. Create visual design components for games and interactive media	3.1 Design a basic graphical user interface (GUI) according to game and interactive media requirements 3.2 Identify and describe interaction processes of GUI elements 3.3 Document design and programming requirements needed in GUI implementation 3.4 Create visual design components for use in GUI using graphics software
4. Evaluate implementation	4.1 Present and demonstrate visual design component to required personnel 4.2 Assess and evaluate usability of design components and confirm project brief and requirements have been fulfilled 4.3 Seek feedback from required personnel and identify changes in improving visual design and interactivity of components 4.4 Apply changes to visual design components as required and obtain final sign-off

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Identifies, investigates and applies information from a variety of texts containing highly technical language and expands own knowledge of chosen graphics software programs
Numeracy	• Uses whole numbers, decimals and percentages applicable to measurement, font size, scale, ratio, coordinates, colour, shading and other attributes and variables in developing design specifications and GUI components
Oral communication	• Uses listening and questioning techniques and effective mode of communication to articulate complex concepts and present design using industry language for intended audience
Reading	• Identifies and interprets a range of documents containing complex terminology, and applies the information in selecting software and designing the GUI • Interprets and comprehends diagrams, icons, symbols, text, numbers and letters necessary to design a GUI
Writing	• Prepares documentation detailing GUI design and programming requirements using comprehensive structure, layout and complex industry language
Teamwork	• Cooperates with others as part of routine activities applicable to gaming design concepts
Initiative and enterprise	• Uses a high level of creativity, innovation and initiative in interactive game design
Planning and organising	• Plans, organises and completes work according to defined requirements and schedules • Takes responsibility in making decisions and task sequencing
Self-management	• Makes decisions and implements procedures in both routine and non-routine tasks using formal decision-making processes • Identifies importance of secure information applicable to own work and takes responsibility for data structure, format and management
Technology	• Completes tasks using digital systems and tools

Unit Mapping Information

Supersedes and is equivalent to ICTGAM406 Create visual design components for interactive games.

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Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM425 Create visual design components in interactive games

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design, implement and evaluate a graphical user interface (GUI) with basic functionalities according to game and interactive media requirements.

In the course of the above, the candidate must:

- align visual design components to design brief requirements
- evaluate and select a graphics software package
- develop concept art and design specifications for splash screens, start screens and game field screens according to design brief
- create at least three visual design components and incorporate into GUI
- implement game development and production strategies
- develop technical specifications applicable to visual design components and overall usability.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- GUI design principles and related programming techniques
- human resources required in process of creating visual design components
- technology requirements and technical constraints they impose on design and development
- techniques in applying concept development skills and concept visualisation skills
- organisational procedures and documentation processes that may be used in creating visual design components in interactive games
- standards applicable to creating visual design components.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a design brief
- required hardware, software and peripheral devices applicable in games development
- games engine
- the internet
- industry standard graphics software and included tools and features
- file storage
- word processing software.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM426 Write narrative scripts for interactive games

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to develop, write and test scripts and related content for interactive games.

It applies to individuals who contribute and support the design, development, and programming of digital games as part of a larger development team.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and develop story and script components	1.1 Identify and confirm game genre and story components with required personnel 1.2 Discuss and propose creative script concepts and ideas 1.3 Develop a script structure consistent with game genre and game design brief 1.4 Develop script components in the main plot, background stories and level and mission stories according to game genre and game design brief

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ELEMENT	PERFORMANCE CRITERIA
2. Write a draft script	2.1 Write a script synopsis according to game design brief 2.2 Write a draft script and include main characters and their interactions, background stories and level and mission stories, according to design brief, game structure and genre 2.3 Develop character and narrator dialogue 2.4 Initiate storyboards for draft scripts in required format
3. Review script according to feedback	3.1 Present synopsis and storyboards to required personnel and seek feedback 3.2 Collate and respond to comments and feedback 3.3 Revise scripts and storyboards according to feedback 3.4 Undertake focus testing with intended audience
4. Write final script	4.1 Collate and respond to comments and feedback from focus testing 4.2 Review and rewrite script synopsis, script and dialogue where required 4.3 Initiate revised storyboards where required 4.4 Present final script in agreed format to required personnel and obtain sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Oral communication	• Uses listening and questioning techniques and effective mode of communication to articulate complex concepts and requirements using industry language for intended audience • Presents script using persuasive presentation techniques, plain English (translating games specific terminology where required)
Reading	• Interprets and comprehends a range organisational and client documentation and identifies aim of proposed games • Reviews feedback containing a wide range of vocabulary and terminology ranging from simple to highly technical depending on source of feedback
Writing	• Creates a cohesive and well-structured game script, plot, characters, environment and elements using required spelling and grammar, together with descriptive language
Teamwork	• Cooperates with others as part of routine activities through the

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SKILL	DESCRIPTION
	explanation and testing of gaming scripts
Initiative and enterprise	• Uses a high level of creativity and initiative in writing scripts
Planning and organising	• Plans, organises and completes work according to defined requirements and schedules
Self-management	• Makes decisions and implements procedures in routine and non-routine tasks using formal decision-making processes • Identifies importance of secure information applicable to own work and takes responsibility in data management
Technology	• Writes, sources and analyses information using information and communications technology (ICT) based tools

Unit Mapping Information

Supersedes and is equivalent to ICTGAM407 Write scripts for interactive games.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM426 Write narrative scripts for interactive games

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- write a script according to game design brief and client requirements.

In the course of the above, the candidate must:

- identify key components of the story
- develop script structure and components
- communicate and liaise script review with required personnel
- prepare a final script and present to required personnel
- follow organisational procedures applicable to script writing and development process
- comply with copyright and intellectual property standards and legislation.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- budgeting and scheduling considerations in game development
- components that drive script narrative and engage target audiences
- the contribution of script writing to narrative development and engaging game play
- focus testing processes and procedures
- game genres and narrative structures
- industry standard game script formats
- research methods in:
  - competitors' work in developing stories and scripts in games
  - factual information as a basis for character, location and narrative development
  - owners of copyright and intellectual property used in game development
  - script structures and character profiling in interactive games

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    - scriptwriting techniques and interactive game requirements
    - seeking permission from copyright owners for use of protected elements in scripts
- different storyboarding techniques
- copyright and intellectual property standards and legislation
- organisational procedures that may be used to write scripts for interactive games.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- scriptwriting reference materials
- game design brief
- the internet
- a range of industry standard interactive games across all platforms and genres
- a range of industry standard games consoles and hand-held game devices
- required hardware, software and peripheral devices
- file storage
- games engine.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM427 Use 3-D software interface and toolsets

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to investigate, customise and use 3-D animation software interfaces and toolsets.

It applies to individuals who support the design, development and programming of basic digital games as part of a larger development team and gaming environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Locate and identify 3-D software navigation controls	1.1 Research and evaluate a range of industry standard 3-D modelling and animation software 1.2 Identify task requirements and select 3-D modelling and animation software applicable to task 1.3 Identify a range of 3-D navigation types, including panning, zooming and rotating around viewport, on chosen 3-D modelling and animation software 1.4 Identify processes of improving user performance including navigation, keyboard hotkeys and input procedures

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ELEMENT	PERFORMANCE CRITERIA
2. Locate and identify 3-D animation toolsets and select required menu categories	2.1 Identify toolsets of industry standard 3-D animation software 2.2 Identify and analyse 3-D software menus and specific category types 2.3 Define and use 3-D software-specific transformation types and toolset types 2.4 Associate menu categories as required according to task requirements 2.5 Consult with required personnel and perform software interaction using application hotkeys
3. Initiate and use software-support materials and customise application interface	3.1 Identify and research range of reference material available in creating 3-D animation and digital effects 3.2 Present reference material required in 3-D animation process to required personnel and team members 3.3 Identify and access animation software support procedures, documents and help files, through hotkey and application menus 3.4 Consult with required personnel and use applicable support materials
4. Identify and plan 3-D application import and export procedures and use application feedback	4.1 Discuss application file-management procedure types with required personnel, including opening, importing, saving and exporting 4.2 Discuss and use application project configuration procedures with required personnel 4.3 Prepare and create projects as required 4.4 Discuss user application feedback with required personnel 4.5 Troubleshoot error scenarios as required using application feedback 4.6 Use feedback with inbuilt support documentation as required
5. Customise application interface	5.1 Identify variation of user interface windows and panels configurations 5.2 Use custom interface according to toolset procedural needs and task requirements

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Uses whole numbers, decimals and percentages applicable to measurement, font size, scale, ratio, coordinates, colour, shading and other attributes and variables in developing animations
Oral communication	• Uses effective listening, questioning and summarising techniques to obtain and present information and solutions using industry language for intended audience
Reading	• Identifies and interprets information from texts containing complex terminology, acronyms and jargon • Interprets and comprehends generated text, diagrams, icons, symbols, numbers and letters required in using 3-D animation software
Teamwork	• Cooperates and collaborates with others as part of routine activities and elicits support
Self-management	• Makes routine decisions and implements standard procedures in routine tasks • Uses formal decision making processes in more broad and non-routine situations
Technology	• Completes routine tasks using digital systems and tools

Unit Mapping Information

Supersedes and is equivalent to ICTGAM408 Use 3-D animation interface and toolsets.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM427 Use 3-D software interface and toolsets

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- interact and navigate with at least one 3-D application interface and its toolsets.

In the course of the above, the candidate must:

- manage files to protocols
- execute and use 3-D application native support
- use 3-D application user feedback
- configure custom panels and window configurations.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- 3-D animation production protocols
- industry standard 3-D modelling and animation software
- contents and application of production brief
- development process that may be used in 3-D software interface and toolsets
- protocols in filing media assets
- file management procedures and project configuration procedures that may be used in 3-D software interface and toolsets
- fundamental research principles procedures that may be used in 3-D software interface and toolsets
- principles of design and colour used in 3-D animation and digital effects environments
- procedures for producing a storyboard and script
- technical constraints that hardware and software impose on graphics requirements and creative visual design.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- reference materials applicable to creating 3-D animation and digital effects
- required hardware and software and peripheral devices
- games engine
- file storage
- required 3-D modelling and animation software.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM428 Create 3-D characters for interactive games

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to design and build 3-D characters for commercial interactive games.

It applies to individuals who support the design, development and implementation of the 3D characters of digital games, as part of a larger development team and gaming environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and discuss character requirements and designs	1.1 Identify client and character requirements and environment and context of interactive game 1.2 Discuss and determine style of characters with required personnel according to client requirements 1.3 Determine and agree on character type, role, name and profile 1.4 Discuss and determine character animations required in game systems implementation 1.5 Compare animations with analysis criteria, game and client requirements
2. Design characters	2.1 Design and develop a concept character illustration according to organisational procedures and client

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	requirements 2.2 Conduct focus testing of concept illustration with required personnel and representatives of target market audience 2.3 Develop character schematics with feedback incorporated and submit to required personnel for approval
3. Develop character models	3.1 Construct a 3-D character model according to character schematics and task requirements 3.2 Construct 3-D costumes, tools and accessories as required by character model 3.3 Shade, texture and light the completed character model 3.4 Implement joints, vertex weighting and character rig to 3-D character model 3.5 Develop animation blocking and in-betweens in consultation with animation personnel and seek their approval 3.6 Compare 3-D models and animations with original concept illustration and confirm quality and conformity to brief 3.7 Submit to required personnel and obtain approval

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	**Description**
Numeracy	• Uses whole numbers, decimals and percentages applicable to measurement, font size, scale, ratio, coordinates, colour, shading and other attributes and variables, in developing animations
Oral communication	• Uses listening and questioning techniques to obtain information and present ideas and solutions using industry language for intended audience
Reading	• Identifies and interprets design briefs and related technical documentation, containing complex animation-specific terminology and acronyms • Interprets and comprehends computer-generated text, diagrams, icons, symbols, numbers and letters required in using 3-D animation software
Writing	• Uses simple and cohesive English when developing focus testing documentation

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Skill	Description
Teamwork	• Cooperates with others as part of familiar routine activities and confirms agreement
Initiative and enterprise	• Uses creativity and initiative in character design
Planning and organising	• Plans, organises and completes work according to defined requirements and schedules
Self-management	• Makes decisions and implements procedures in both routine and non-routine tasks, using formal decision-making processes
Technology	• Completes required tasks using digital systems and tools

Unit Mapping Information

Supersedes and is equivalent to ICTGAM409 Create 3-D characters for interactive games.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM428 Create 3-D characters for interactive games

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design and develop at least three game characters using 2-D and 3-D software applications.

In the course of the above, the candidate must:

- comply with games design brief and client requirements
- follow organisational procedures
- test and seek feedback to character designs with intended audiences and act accordingly.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- features of 3-D software packages used to create 3-D character models in games
- industry standard game design briefs
- different character styles and animations
- 3-D character modelling methods, within the technical parameters and constraints of game development
- technical limitations of creating 3-D character models in games
- organisational procedures that maybe used to create 3-D character for interactive games.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

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- required hardware and software
- games engine
- file storage
- character reference materials including models, illustrations, art and design books and character photographs
- a range of industry standard games, across all platforms and genres
- a range of industry standard consoles and hand-held game devices.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM429 Develop 3-D components for interactive games

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to design and to create, 3-D components within a game environment.

It applies to individuals who support the design, development and programming of basic digital games as part of a larger development team.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and confirm 3-D component requirements within game context	1.1 Obtain game design document and identify definition and purpose of 3-D components, with examples 1.2 Identify context of 3-D component design according to game design document 1.3 Create a list of required 3-D components 1.4 Establish methods of 3-D component loading and usage 1.5 Identify quality assurance standards, evaluation methods and organisational procedures applicable in developing 3-D components

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ELEMENT	PERFORMANCE CRITERIA
2. Establish content creation pipeline and integration methods within game architecture	2.1 Finalise required 3-D component list 2.2 Discuss 3-D component formats, file extensions and ramifications of choice with required personnel 2.3 Discuss and select hardware and software required in creating 3-D components and assets 2.4 Discuss methods of naming 3-D components and assets and file archiving 2.5 Establish schedule and deadlines in 3-D component creation process
3. Create, integrate and test required 3-D components	3.1 Create required 3-D components and assets according to organisational procedures and client requirements 3.2 Name 3-D components and assets according to methodology discussed 3.3 Confirm 3-D components and assets are in required format and file extensions 3.4 Test and confirm produced 3-D components meet established quality and client requirements 3.5 Seek feedback from required personnel and make changes to 3-D components and assets as required 3.6 Submit finalised assets with required archiving format outlined in the assignment brief and obtain sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Numeracy	• Uses whole numbers, decimals and percentages applicable to file size, software and hardware specifications, measurement, font size, scale, ratio, coordinates, colour, shading and other attributes and variables in developing 3-D components and timelines • Defines timeframes in accordance with schedule requirements
Oral communication	• Obtains information and expresses ideas and solutions by employing listening and open questioning techniques using plain English and games development terminology
Reading	• Identifies and interprets briefs and applicable technical documentation

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Skill	Description
	containing complex task-specific terminology • Interprets and comprehends computer generated text, diagrams, icons, symbols, numbers and letters required in using 3-D application software
Self-management	• Makes routine decisions and implements standard procedures in routine tasks • Uses formal decision-making processes in more complex and non-routine situations • Evaluates work and implements improvements using a systematic process • Identifies importance of file format and takes responsibility in data integrity and management
Technology	• Completes routine tasks using specific digital systems and tools

Unit Mapping Information

Supersedes and is equivalent to ICTGAM410 Develop 3-D components for interactive games.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM429 Develop 3-D components for interactive games

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify, design and generate at least three 3-D components.

In the course of the above, the candidate must:

- identify component integration
- establish component development pipeline
- follow game design document requirements
- use required formats and file extensions
- name and store components according to agreed methods and organisational procedures
- comply with quality assurance standards
- test and analyse component integration.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard game hardware and software products
- game-engine architecture and methods used in component importing
- 3-D components testing methods and processes
- processes and techniques applicable to:
  - the creation of 3-D objects within industry-standard modelling software
  - the use of industry formats in developing 3-D models and objects
- organisational procedures and quality assurance standards that may be used in the development of 3-D components for interactive games.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- required hardware and software
- industry-standard modelling software
- client requirements documentation
- game design document
- games engine
- file storage.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM430 Design interactive media

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to design and implement technologies relating to human-computer interaction.

It applies to individuals who support the design, development and programming of basic digital games as part of a larger development team and gaming environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and research human-computer hardware interface devices, event-handling systems and graphical user interface (GUI) widget sets	1.1 Identify standard and game-specific human-computer interaction devices and controls used in their implementation 1.2 Identify and review industry-standard event-handling systems used in application libraries 1.3 Identify human-computer interaction device selection 1.4 Identify widgets and their usage within an application environment 1.5 Identify and review industry-standard

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ELEMENT	PERFORMANCE CRITERIA
	graphical user interface libraries and their use within game engine 1.6 Analyse selection of widgets within a game heads-up display (HUD)
2. Design a simple media software device	2.1 Identify task requirements and design a prototype required in developing a custom user interface widget according to organisational procedures 2.2 Confirm custom user interface widget can be used within a game heads up display environment 2.3 Select GUI software required in implementation and discuss ramifications of selection with required personnel
3. Build and implement a simple media software device	3.1 Create and develop a custom user interface widget according to organisational procedures and task requirements 3.2 Integrate all custom widget elements as required by prototype specifications 3.3 Test and confirm interactive media is functional on multiple browsers and digital devices 3.4 Perform final checks and confirm functionality conforms to original design 3.5 Seek feedback from required personnel and incorporate changes as required 3.6 Save into specified storage systems and locations according to organisational procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description

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Skill	Description
Numeracy	• Uses whole numbers, decimals and percentages applicable to file size, software and hardware specifications, measurement, font size, scale, ratio, colour, shading and other attributes and variables in developing interactive media
Oral communication	• Obtains information and expresses ideas and solutions by employing listening and open questioning techniques using plain English and interactive media terminology
Reading	• Identifies and evaluates online documentation containing complex technical terminology when conducting research into hardware, existing interactive media and industry standards • Interprets and comprehends computer-generated text, code, diagrams, icons, symbols, numbers and letters required in using applicable software
Writing	• Identifies and uses technical terminology, code, syntax and labelling when conducting research and developing interactive media
Problem solving	• Uses systematic processes in complex, non-routine situations, setting goals, gathering required information and identifies and evaluates options against agreed criteria • Uses analytical processes in deciding on a course of action, establishing criteria for deciding between options and seeking input and advice from others before taking action, when required
Self-management	• Identifies importance of file integrity and management
Technology	• Completes routine tasks using specific digital systems and tools

Unit Mapping Information

Supersedes and is equivalent to ICTGAM412 Design interactive media.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM430 Design interactive media

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- create an application, accessing and using technologies and showcasing captured events from hardware devices
- create an application using a human-computer interface devices and event-handling call-backs showcasing the captured events with GUI widgets
- design a simple application, using required hardware event handling methods, within the context of game environment
- produce a custom control.

In the course of the above, the candidate must:

- present completed project to required deadline
- comply with organisational procedures.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- programming techniques applicable to interactive media
- specific terminology used by game developers
- hardware and software requirements in a human-computer interaction environment
- a range of human-computer interaction devices and their application
- widgets and their usage
- operations in ‘heads-up’ display environments
- technical constraints imposed by hardware and software on design and development
- file storage and organisational procedures that may be used in designing interactive media.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- required hardware and software and peripheral devices
- human-computer hardware interface devices
- a range of event-handling systems
- the internet
- application libraries
- widgets
- graphical user interface software and libraries
- games engine
- a range of browsers and digital devices
- client requirements documentation
- file storage.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM431 Design and create 3-D digital models

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to design and create 3-D models.

It applies to individuals who design, develop and use digital media technologies, working independently and as part of a larger development team.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and clarify work requirements	1.1 Identify requirements and purpose of designing and creating 3-D digital models with reference to production documentation 1.2 Clarify organisational guidelines, workflow sequences and industry standards applicable to designing and creating 3-D models 1.3 Discuss production schedule deadlines and confirm they are feasible and can be met with required personnel 1.4 Research and select software applicable to type of production and delivery platform of 3-D digital models 1.5 Gather and analyse reference materials applicable to design and visualisation of 3-D models 1.6 Identify and establish documentation requirements according to industry and organisational procedures and guidelines

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2. Design 3-D digital models	2.1 Design and sketch concept drafts of a 3-D model according to task requirements 2.2 Create concept art of required 3-D models 2.3 Create prototypes of 3-D models according to organisational guidelines and task requirements 2.4 Discuss prototypes and seek feedback from required personnel 2.5 Apply required changes to prototypes according to feedback
3. Create 3-D digital models	3.1 Confirm topology of models aligns to task requirements 3.2 Block out models and apply shaders using software features and determine required model proportions 3.3 Manipulate software features and apply basic lighting as required 3.4 Refine and check integrity of models until design requirements are met 3.5 Submit models to required personnel and seek comments and feedback on whether production requirements have been met
4. Finalise 3-D digital models	4.1 Respond to feedback from required personnel 4.2 Render and output models in required format and submit them to required personnel by agreed deadlines 4.3 Make backup copies of the files, store in required location and complete workplace documentation according to organisational procedures 4.4 Obtain final sign off from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	**Description**
Numeracy	• Uses whole numbers, decimals and percentages applicable to file size, software and hardware specifications, measurement, scale, form, weight, volume, colour, shading and other attributes and variables in developing 3-D models
Oral communication	• Employs listening and open-questioning techniques to clarify design requirements, project scheduling and obtain feedback
Reading	• Identifies and evaluates documentation containing complex technical terminology when interpreting the design brief • Conducts research into the design and visualisation of 3-D models • Interprets and comprehends computer-generated text, diagrams, icons, symbols, numbers and letters required in using applicable

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Skill	Description
	software
Planning and organising	• Takes responsibility in planning tasks required in achieving outcomes and negotiates key aspects with others
Problem solving	• Make decisions directly related to tasks using analytical processes
Self-management	• Implements actions as per plan, making slight adjustments as required and addresses unexpected issues • Evaluates outcomes of design solutions and improves future responses • Selects and supports new ideas on the basis of their contribution to achievement of broader goals
Technology	• Completes routine tasks using specific digital systems and tools • Manages and maintains files in a variety of storage media and formats

Unit Mapping Information

Supersedes and is equivalent to ICTGAM413 Design and create 3-D digital models.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM431 Design and create 3-D digital models

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design, create and store at least two 3-D digital models according to work, design and production requirements.

In the course of the above, the candidate must:

- communicate with required personnel and clarify initial requirements including deadlines
- modify and amend 3-D models in response to feedback from required personnel
- comply with organisational guidelines and industry standards applicable to designing and creating 3-D models.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- 3-D digital modelling and design principles
- stages in model production process, from initial design through to finished product
- issues and challenges arising from designing and creating 3-D digital models
- roles and responsibilities of project team members in developing digital models
- features of a range of delivery platforms
- geometry as it applies to the design and creation of realistic 3-D digital models
- use of scale, form, weight and volume in the development of 3-D digital models
- organisational guidelines and procedures
- industry standards applicable to designing and creating 3-D models
- range of industry standard 3-D modelling software.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- required hardware and software
- required industry standard 3-D modelling software and features
- a range of industry standard delivery platforms
- client specification documentation
- reference materials applicable to design and visualisation of 3-D models
- file storage
- 3-D product modelling software and delivery platforms.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM432 Create audio for digital games

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to produce and manipulate audio assets for digital games, using a variety of tools.

It applies to individuals who support the design, development and programming of basic digital games as part of a larger development team in a game development environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Research and document game audio in digital games	1.1 Identify and document trends and evaluate their impact on the future of game audio 1.2 Identify and document different methods of using audio in digital games 1.3 Identify and document role of music in creating mood and atmosphere 1.4 Determine and document how sound effects and vocals are used within digital games

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ELEMENT	PERFORMANCE CRITERIA
2. Source existing sound effects, music tracks and voice recordings	2.1 Find sources of sound effects, music tracks and voice recordings 2.2 Create and maintain a small collection of audio assets 2.3 Identify different audio formats in audio asset collection 2.4 Differentiate between compressed and uncompressed audio formats 2.5 Identify different genres of music required for digital games 2.6 Identify audio copyright laws and royalty-free audio
3. Record and manipulate game audio	3.1 Identify game context and establish client requirements for game audio 3.2 Evaluate a range of industry standard audio-editing software and select software applicable to game audio requirements 3.3 Record character voices, music and sound effects according to game audio requirements 3.4 Develop a soundtrack using audio-editing, according to game and client requirements 3.5 Rearrange audio samples using audio-editing software and apply required audio effects 3.6 Select required sample format and bit rate 3.7 Normalise audio samples and make volume uniform 3.8 Trim audio samples according to task requirements 3.9 Export audio to required format
4. Create sound effects and music for a game	4.1 Evaluate a range of music production software and select software applicable to game and audio requirements 4.2 Identify digital sound waveforms 4.2 Apply basic music theory to music production software 4.3 Determine required musical notation 4.4 Identify and use musical tools within music production software 4.5 Compose a simple piece of music according to game audio requirements 4.6 Create various sound effects according to

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ELEMENT	PERFORMANCE CRITERIA
	game audio requirements
5. Research audio-programming libraries and integrate sound, music and vocals into digital games	5.1 Identify and compare functional capabilities of a range of industry standard audio-programming libraries 5.2 Explore use of channels and mixing 5.3 Play a mixture of cached and streaming audio sources 5.4 Incorporate music and sound effects into different sections of digital game according to game requirements 5.5 Locate and play positional audio sources 5.6 Present to required personnel and confirm audio integration fulfils client and game requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Numeracy	• Uses whole numbers, decimals and percentages applicable to file size, software and hardware specifications, measurement, pitch, speed, tempo, time, frequency, amplification and other attributes and variables in developing audio
Oral communication	• Uses listening and questioning techniques to gather information and requirements using industry language for intended audience
Reading	• Identifies and evaluates documentation containing complex technical and audio terminology • Researches use of audio in games and identifies required hardware, software and assets • Interprets and comprehends computer-generated text, audio tracks, abbreviations, symbols, icons, numbers and letters required in using audio-editing software
Writing	• Prepares documentation detailing research and sound effects

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Skill	Description
	according to organisational requirements
Planning and organising	• Plans, organises and implements tasks required and achieves required outcomes
Self-management	• Takes personal responsibility and adheres to legal and regulatory responsibilities applicable to own work context and copyright laws • Implements actions as per plan, making slight adjustments as required • Identifies new ideas and adapts existing ideas to applicable context using exploration, analytical and lateral thinking
Technology	• Creates and saves files in required formats using digital systems and tools

Unit Mapping Information

Supersedes and is equivalent to ICTGAM414 Create audio for digital games.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM432 Create audio for digital games

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- source and analyse at least three audio resources from at least three different music genres
- record and manipulate at least three different pieces of audio
- generate at least three sound effects
- compose at least one simple music tracks
- integrate at least one simple music track and at least three different sound effects into a digital game.

In the course of the above, the candidate must:

- create audio according to game context and game environment
- evaluate, select and use audio programming libraries
- comply with copyright legislation and applicable industry standards.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard audio-editing software, music production software and tools
- different audio formats and their application to games
- capabilities of audio-programming libraries
- basic music theory relevant to audio recording for digital game development
- copyright legislation and industry standards applicable to audio recordings
- music-creation tools and their relation to music theory.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- required hardware, software and peripheral devices
- specifications documentation detailing game context and environment
- digital audio editing software
- music production software
- audio-programming libraries
- games engine
- file storage
- the internet
- a range of digital games
- copyright and intellectual property legislation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM433 Prepare and complete image rendering processes

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to select applicable rendering software packages and prepare and optimise rendering for 3-D modelling, animation and game development.

It applies to individuals who support the design, development and programming of basic digital games as part of a larger development team.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and analyse rendering requirements and select rendering software	1.1 Identify project requirements and applicable equipment and media 1.2 Identify and evaluate features of rendering software packages used in the film and games industries 1.3 Analyse design brief and other reference sources and plan and determine rendering requirements 1.4 Select rendering software according to timeframe and budget requirements 1.5 Confirm selection according to brief, system limitations and requirements

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ELEMENT	PERFORMANCE CRITERIA
2. Prepare rendering software and check render integrity and quality	2.1 Select and apply required image resolutions, image aspect ratio and pixel ratio according to project requirements 2.2 Adjust renderer attributes and obtain required anti-aliasing and other visual effects 2.3 Refine render integrity 2.4 Re-link any missing images and textures 2.5 Test render times for optimising process 2.6 Determine alpha channels and opacity matts 2.7 Identify render layers and passes
3. Optimise images prior to render processes	3.1 Complete pre-rendering optimisation tasks 3.2 Adjust and refine renderer attributes required in optimising render times 3.3 Select required file output format according to project brief 3.4 Identify and determine applicable filenames and output destinations according to organisational procedures
4. Render images and save files according to organisational procedures	4.1 Test and perform rendering processes according to project brief 4.2 Seek feedback from required personnel on rendered images, and amend accordingly 4.3 Store and archive files according to organisational procedures 4.4 Review completed render and confirm compliance with system and brief 4.5 Confirm final rendered image with required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Numeracy	• Uses whole numbers, decimals and percentages applicable to measurement, resolution aspect ratio, pixel ratio, scale, coordinates, colour, shading and other attributes and variables in rendering processes • Interprets numerical information and applies basic mathematical

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Skill	Description
	calculations applicable to timelines and budgetary information
Oral communication	• Uses listening and questioning techniques to obtain information about design brief, system limitations, software capabilities and requirements Presents rendering outcomes using industry-specific terminology
Reading	• Interprets a design brief containing complex games-design terminology • Interprets and comprehends a large range of diagrams, icons, symbols, text and letters required in using complex rendering software
Teamwork	• Collaborates with others as required and confirms required rendering output
Self-management	• Applies formal processes when planning rendering requirements, producing plans with logically sequenced steps with awareness of time and resource constraints • Implements actions as per plans, making slight adjustments as required • Recognises and takes responsibility in addressing predictable and some less predictable problems in familiar work contexts • Identifies key principles and concepts underpinning design and operation of digital systems and tools
Technology	• Manages and maintains files securely in a variety of storage media and formats

Unit Mapping Information

Supersedes and is equivalent to ICTGAM416 Prepare and complete image rendering processes.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM433 Prepare and complete image rendering processes

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- optimise and render at least three images using required rendering software, according to design brief.

In the course of the above, the candidate must:

- use and optimise rendering software components
- adhere to requirements related to file sizes and formats
- store rendered components according to requirements.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- software features used for:
  - 3-D animation
  - 3-D modelling
  - lighting
  - rendering
  - shading
  - texturing
- file format and size requirements
- system requirements
- industry standard rendering software packages
- pre-rendering optimisation techniques
- why rendering is required in 3-D modelling, animation and game development
- organisational procedures.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- required hardware, software and peripheral devices
- graphic rendering software packages
- input and output devices
- models and scenes requiring rendering
- style shots
- file storage
- project and design briefs, specifications and schedules.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM532 Create design concepts for digital games and 3-D media

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to work innovatively in game development, using thoughtful strategies and well-developed technical skills to accommodate specified design briefs.

It applies to those who support the design, development and programming of interactive 3-D media and digital games as part of a larger development team.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and analyse digital games and 3-D media design concepts	1.1 Obtain project brief and other applicable organisational documents and procedures 1.2 Research and identify design concepts in digital games and interactive 3-D media 1.3 Analyse and interpret design concepts used in digital games and interactive 3-D media 1.4 Discuss design considerations for designing digital games and interactive 3-D media concepts
2. Evaluate and select software packages	2.1 Identify and review applicable industry-standard software available for developing design concepts

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Assess software according to concept design process requirements 2.3 Discuss technical specifications for development process with required personnel 2.4 Select software package according to concept design requirements
3. Use chosen software package	3.1 Run selected software package and navigate user interface according to vendor requirements 3.2 Create new files and organise and develop file structure 3.3 Identify and use tools and components required to create and develop digital games and interactive 3-D media concepts
4. Create concept components for digital game or interactive media	4.1 Identify specific processes for heads-up display elements 4.2 Design heads-up display for a digital game or 3-D interactive media 4.3 Document design and programming processes and requirements applicable to implementing heads-up display according to organisational procedures 4.4 Create and develop visual design elements and components to be used for heads-up display using chosen software package
5. Implement a design concept into a game or 3-D interactive media and evaluate implementation	5.1 Load in required images and write code to implement heads-up display into an existing framework 5.2 Write code and demonstrate heads-up display capabilities with implemented concepts 5.3 Demonstrate implementation to required personnel 5.4 Seek feedback and assess and refine concept as required 5.5 Evaluate usability of concept's components 5.6 Identify and discuss possible changes to improve visual design and capabilities of components and share findings with required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

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Skill	Description
Learning	• Acquires knowledge needed to use tools and other components for digital games and 3-D media production using a range of investigative and analysis techniques
Reading	• Interprets and comprehends a large range of textual and diagrammatic information to inform instructional, technical, and conceptual requirements
Oral Communication	• Elicits information using listening and open questioning techniques • Speaks clearly and concisely, converting highly technical language and terminology into plain English when providing information
Numeracy	• Uses whole numbers, decimals and percentages, when manipulating software to achieve required technical and design components
Teamwork	• Cooperates and collaborates with others as part of routine activities and elicits support and feedback
Initiative and enterprise	• Uses creativity and initiative in 3-D design
Self-management	• Plans, organises and completes work according to defined requirements and schedules, taking responsibility for decisions, and sequencing tasks to achieve required outcomes • Sources, analyses and evaluates applications with potential to meet 3-D design requirements • Evaluates work and implements improvements using a systematic process
Technology	• Defines purpose and uses key features of specific digital systems and tools and operates them to complete design tasks • Identifies importance of file structure and takes responsibility for data integrity and management

Unit Mapping Information

Supersedes and is equivalent to ICTGAM501 Create design concepts for digital games and 3-D media.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM532 Create design concepts for digital games and 3-D media

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop concept art and design specifications consistent with an identified game genre for at least one of each of the following:
  - heads-up display
  - splash screen
  - start screen
  - game field screen
- implement a working heads-up display with at least three basic functionalities.

In the course of the above, the candidate must:

- demonstrate original and innovative approaches to the creative development of a game
- implement game development and production strategies
- maintain integrity of design brief
- develop technical specifications for game mechanics, artificial intelligence, physics, sound, game play and overall usability
- confirm design concepts are functional on at least two different browsers and at least two different devices
- evaluate different controller designs required according to different devices digital games and 3-D media.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- basic programming techniques and language
- industry-standard software applicable to developing design concepts

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- capabilities and constraints of game engines
- concept development process and visualisation skills
- game development process, including specific terminology
- key features of game-play hardware and software products
- human resources required in the process of creating games and their respective skills and technology requirements
- work health and safety (WHS) requirements relating to:
  - ergonomics
  - electrical safety
- risk and critical path management techniques
- technical constraints that hardware imposes on:
  - software development
  - graphics requirements
  - code development
  - creative visual design
- organisational procedures applicable to documenting and creating design concepts.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- hardware and software applicable to creating design concepts for digital games and 3-D media
- games engine
- file storage
- browsers and digital devices
- the internet
- organisational procedures applicable to documenting and creating design concepts.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM533 Create complex 3-D interactive games

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to use original and innovative ideas and industry-standard production techniques, to create functional games according to specific design briefs.

It applies to those who support the design, development and programming of interactive 3-D media, and digital games as part of a larger development team.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to create game	1.1 Obtain project brief and other required documents and organisational procedures 1.2 Identify game production assets required to meet creative and production requirements and technical specifications 1.3 Discuss formats of assets and issues of asset integration with required personnel 1.4 Determine sequence for development of beta-version prototype for testing game play 1.5 Create schedule for production and testing 1.6 Determine strategies for monitoring production progress against schedule

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ELEMENT	PERFORMANCE CRITERIA
2. Evaluate capability of game-engine software and tools	2.1 Identify and review range of industry-standard game-engine software and development tools available 2.2 Assess software and tools related to specified game concept and play requirements 2.3 Discuss considerations for selection of game-engine software with required personnel and confirm selection will meet specified outcomes 2.4 Select game-engine software and development tools
3. Prepare required assets for a game	3.1 Establish environment for project that supports sharing of project assets produced by team members 3.2 Review attributes of assets required in a game project related to game engine 3.3 Create or acquire visual assets for a games project 3.4 Customise asset attributes according to game design and chosen game engine
4. Use game-engine software and development tools	4.1 Create, modify or access scripts or code and combine assets 4.2 Create and check game-play elements according to creative and technical requirements 4.3 Test and run game prototype as a presentation and confirm sequences meet creative, production and technical requirements
5. Evaluate game prototype	5.1 Demonstrate initial prototype to required personnel and seek feedback 5.2 Evaluate prototype against criteria including achievement of a creative and user-friendly product 5.3 Discuss and agree on required changes 5.4 Assist if required in tests and user trials 5.5 Evaluate feedback from user trials 5.6 Confirm endorsement from required personnel and develop prototype into a complete product
6. Transform prototype into final publication	6.1 Make required changes as indicated by user trials 6.2 Integrate all game elements as required by specifications 6.3 Make final checks and confirm sequences conform to navigation design 6.4 Obtain final sign-off from required personnel 6.5 Assemble final publication for distribution according to organisational procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Interprets and comprehends a large range of textual and diagrammatic information, to inform instructional, technical and conceptual requirements
Oral Communication	• Uses listening and open questioning techniques to obtain required information and concepts using appropriate industry language for intended audience
Numeracy	• Uses whole numbers, decimals and percentages when manipulating software according to technical and design component requirements • Defines timeframes according to schedule requirements
Teamwork	• Cooperates and collaborates with others as part of routine activities to achieve team results, and to confirm that outcomes meet requirements
Initiative and enterprise	• Uses creativity and initiative in game design
Planning and organising	• Plans, organises, and completes work according to defined requirements and schedules, taking responsibility for decisions, and sequencing tasks to achieve efficient outcomes • Plans, organises, and completes work according to defined requirements and schedules, taking responsibility for decisions and sequencing tasks
Self-management	• Sources, analyses and evaluates applications, tools and assets for their potential to meet creative requirements • Uses a systematic process to evaluate work and to implement improvements
Technology	• Identifies purposes, and uses key features, of specific digital systems and tools, and operates them in order to complete design tasks

Unit Mapping Information

Supersedes and is equivalent to ICTGAM503 Create a complex 3-D interactive computer game.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM533 Create complex 3-D interactive games

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- create a complex 3-D interactive game according to a design brief, on at least one occasion.

In the course of the above, the candidate must:

- apply a variety of strategies for game trialling and testing
- apply original and innovative approaches to creative development of a 3-D game
- collaborate in use of tools and features of software applicable to game-production process
- implement game development and production strategies
- maintain integrity of the design brief and game design document
- communicate, collaborate and participate in a team environment
- compare different controller designs required according to different devices
- confirm functionality on at least two different browsers and at least two different digital devices.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- basic programming techniques and language
- capabilities and constraints of game engines
- processes used for games development, including specific terminology
- production and testing scheduling techniques
- key features of game-play hardware and software products
- risk and critical path management techniques
- technical constraints that hardware imposes on:

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  - graphics requirements
  - code development
  - creative visual design
- creative, production and technical requirements of creating 3-D games
- asset formats and issues of game asset integration.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- hardware and software applicable to creating 3-D interactive games
- project brief
- games engine
- browsers and digital devices
- file storage
- the internet.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM534 Manage interactive media productions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to prepare, manage and monitor interactive media or game production teams.

It applies to those who manage personnel in the interactive media or game development industry, including concept artists, designers, programmers, animators and others.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare digital media team	1.1 Undertake work placement of production team according to project requirements and business need 1.2 Confirm team requirements according to business need 1.3 Confirm team expectations according to organisation policy and procedures and business need
2. Monitor workplace structure	2.1 Determine duties carried out by various personnel according to project requirements 2.2 Observe lines of reporting and communication 2.3 Determine responsibilities of own department
3. Identify behaviours and attitude	3.1 Identify and document organisational culture according to organisational requirements

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ELEMENT	PERFORMANCE CRITERIA
	3.2 Determine and document model behaviour and communication methodologies 3.3 Engage and communicate with required personnel according to project requirements
4. Report on team workplace experience	4.1 Record team daily activities according to organisational requirements 4.2 Determine and document summary of team workplace experience according to organisational requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Learning	• Draws on a repertoire of experience to facilitate understanding of the culture and the environment
Oral communication	• Uses listening and open questioning techniques to obtain required information and concepts using appropriate industry language for intended audience
Reading	• Interprets and comprehends instructions, including textual and diagrammatic information to inform job requirements
Teamwork	• Cooperates and collaborates with others as part of routine activities, and to elicit support and feedback • Collaborates with others sharing information to build strong connections, demonstrating behaviours reflective of organisational culture
Planning and organising	• Plans, organises and completes work according to defined requirements and schedules, taking responsibility for decisions, and scheduling tasks to achieve efficient outcomes
Problem solving	• Responds intuitively to problems requiring immediate resolution, drawing on past experiences to focus on the cause of a problem rather than the symptom

Unit Mapping Information

Supersedes and is equivalent to ICTGAM504 Manage interactive media production.

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Links

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Assessment Requirements for ICTGAM534 Manage interactive media productions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- plan assigned tasks and monitor team behaviours in a production environment on at least two occasions.

In the course of the above, the candidate must:

- demonstrate effective communication, listening and questioning skills with required personnel, including use of industry terminology
- operate according to the lines of reporting and required method of communication
- allocate tasks to required personnel
- document plans and outcomes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- basic 3-D techniques relating to managing interactive media production
- budgeting and scheduling considerations for 3-D design
- capabilities and constraints of 3-D packages
- key features of industry standard game-play hardware and software products
- technical constraints that hardware or software imposes on graphics and visual design
- process required to produce a 3-D animation sequence or components
- roles and responsibilities of team members producing 3-D animations and digital effects
- strategies for communicating with production teams and clients.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- an environment where interactive media production is carried out
- organisational guidelines and policies
- personnel required to managing interactive media productions.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM535 Develop complex 3-D software for games and interactive media

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to employ multiple 3-D frameworks and libraries, build a graphical user interface (GUI) and develop complex 3-D software with documentation generated using applicable tools.

It applies to programmers who support the design, development and programming of 3-D media and digital games as part of a larger development team.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Define 3-D software requirements and prepare to develop software	1.1 Establish complex 3-D software requirements and applicable legislative and organisational standards 1.2 Employ integrated development environment facilities and include existing 3-D, audio and physics libraries applicable to games or interactive media production 1.3 Configure a 3-D environment compatible with specified platform using existing library facilities and applicable language 1.4 Research and select applicable frameworks or games engine applicable to complex 3-D software requirements

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ELEMENT	PERFORMANCE CRITERIA
2.Use multiple frameworks provided or engines	2.1 Instantiate virtual objects in complex 3-D environment 2.2 Import complex pre-constructed models retrieved from persistent storage into 3-D environment using scripts and library routines 2.3 Animate 3-D objects required by game play and handle collisions between objects in 3-D environment using code 2.4 Generate code and manipulate 3-D objects texturing and other attributes of models during run-time execution 2.5 Incorporate environmental elements and enhance user experience according to project requirements 2.6 Apply functionality to 3D game objects by modifying or extending existing classes 2.7 Select and use exception handling techniques and confirm program stability in complex 3-D environment that uses multiple libraries
3. Create complex GUI for 3-D environment	3.1 Employ integrated development environment facilities and include existing 3-D compatible GUI controls applicable to complex games or interactive media production 3.2 Combine predefined GUI elements and create complex interface for 3-D environment according to project requirements 3.3 Modify scripts and code and customise existing GUI elements according to project requirements 3.4 Write code that processes events raised by complex GUI in 3-D environment 3.5 Create GUI events and modify configuration of complex 3-D environment
4. Debug and finalise complex 3-D software	4.1 Use stand-alone debugging tools and tools provided by integrated development environment and examine variables and trace running code across multiple libraries 4.2 Employ debugging facilities according to organisational procedures 4.3 Seek feedback from required personnel and amend as required 4.4 Identify and choose applicable integrated or third-party documentation tools 4.5 Create and maintain code documentation for complex 3-D project using selected integrated or third-party tools 4.6 Obtain final sign-off from required personnel

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	• Interprets and comprehends instructions, briefs, technical and conceptual information to inform job requirements
Writing	• Writes and customises precise code using specialised language, industry-approved coding techniques and programming practices
Numeracy	• Uses whole numbers, decimals and percentages when manipulating measurement, scale, ratio, coordinates, colour, shading and other variables
Planning and organising	• Plans, organises and completes work according to defined requirements and schedules taking responsibility for decisions and sequencing tasks
Self-management	• Sources, analyses and evaluates applications and tools with potential to meet development and coding requirements • Takes responsibility for data integrity and management
Technology	• Identifies purposes and uses key features of specific digital systems and tools and operates them to complete complex development tasks

Unit Mapping Information

Supersedes and is equivalent to ICTGAM507 Develop intermediate 3-D software for games and interactive media and ICTGAM508 Develop complex 3-D software for games and interactive media.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM535 Develop complex 3-D software for games and interactive media

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop at least one complex 3-D software according to client specifications, on at least one occasion.

In the course of the above, the candidate must:

- employ multiple 3-D frameworks, engines and libraries
- create mesh primitives using 3-D library routines
- generate code and manipulate 3-D objects, including cameras, lights and mesh primitives
- use virtual objects in 3-D environments, including:
  - audio managers
  - cameras
  - lights
  - physics managers
  - viewports
- animate 3-D objects required by game play and:
  - include animation selection/playback for pre-constructed models
  - be based on user input
  - be driven by code
  - include dynamic camera movement as required by game play
- build a complex graphical user interface (GUI) for a 3-D environment
- select and deploy documentation tools
- create and maintain code documentation using applicable tools
- detect logical and coding errors and debug application as required
- comply with legislative and organisational standards.

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Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- processes involved in complex 3-D software development
- legislative and organisational standards applicable to development of complex 3-D software
- configuration processes for 3-D environments, including:
  - device selection
  - game resolution
  - screen colour depth
  - output performance including:
    - anti-aliasing
    - level of detail
    - filtering
    - caustics and refraction
- use of scripts and library routines in 3-D software development environments
- techniques for using multiple games-oriented libraries
- environmental elements in complex 3-D software and impacts on users
- handling and debugging techniques used when developing 3-D software for games and interactive media
- documentation techniques applicable to 3-D software development process
- object-oriented 3-D programming concepts and language
- techniques for using a graphical user interface (GUI) to interact with a user.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- project brief
- software, hardware and 3-D equipment required in developing complex 3-D software for games and interactive media
- integrated development environment facilities
- integrated or third-party documentation tools
- technical manuals and materials applicable to complex 3-D software development
- existing multiple frameworks, search engines or games-oriented libraries.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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ICTGAM536 Design interactive 3-D applications for scientific and mathematical modelling

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to design interactive 3-D applications with applicable environments for scientific and mathematical modelling, according to specifications.

It applies to those with object-oriented programming skills working in any industrial context that requires 3-D computer simulation of a well-defined environment, system or set of relationships.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine and confirm business expectations and needs	1.1 Identify business requirements and verify accuracy of gathered information 1.2 Determine task and user requirements according to business needs 1.3 Determine critical environmental and systemic relationships requiring simulation in 3-D environments 1.4 Identify critical data sources required by simulations or modelling

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ELEMENT	PERFORMANCE CRITERIA
	1.5 Document critical environmental and systemic relationships and data sources requiring simulation in 3-D environments
2. Design interactive 3-D applications for scientific and mathematical modelling	2.1 Provide proof of concept for environmental and systemic relationships using prototyping tools 2.2 Identify, analyse and select technologies and platforms suitable for deployment of scientific or mathematical modelling 2.3 Design algorithms according to requirements of scientific or mathematical modelling in interactive 3-D environments
3. Design 3-D environment that simulates a scientific and mathematical model	3.1 Select applicable visual representation for elements of a 3-D scientific or mathematical model according to task requirements 3.2 Analyse required interaction between user and 3-D environment according to task requirements 3.3 Design a graphical user interface (GUI) and support required interaction between user and 3-D environment
4. Test and finalise scientific and mathematical model	4.1 Develop and document testing procedures and standards and verify modelling integrity 4.2 Perform testing and evaluate results and confirm model meets task requirements 4.3 Seek feedback from required personnel and amend model as required 4.4 Document work performed and obtain final sign-off according to organisational procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	• Interprets, analyses and comprehends instructions, briefs, technical and conceptual information to inform job requirements.
Writing	• Writes and customises precise code using specialised language, industry-approved coding techniques and programming practices • Prepares documentation detailing testing procedures and standards

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Skill	Description
Numeracy	• Uses whole numbers, decimals and percentages when manipulating measurement, scale, ratio, coordinates, colour, shading and other variables during application phase • Designs complex algorithms
Get the work done	• Plans, organises and completes work according to defined requirements and schedules taking responsibility for decisions and sequencing tasks • Takes responsibility for decisions regarding end-product evaluation, data integrity and management • Identifies purposes and uses key features of specific digital systems and tools and operates them to complete development tasks

Unit Mapping Information

Supersedes and is equivalent to ICTGAM509 Design interactive 3-D applications for scientific and mathematical modelling.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM536 Design interactive 3-D applications for scientific and mathematical modelling

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design an interactive 3-D application according to scientific and mathematical modelling requirements on at least one occasion.

In the course of the above, the candidate must:

- comply with task and user requirements and organisational procedures
- confirm interactive 3-D environment reflects scientific and mathematical modelling requirements
- confirm functionality of 3-D application for scientific and mathematical modelling on at least two different browsers and at least two different devices.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- documentation techniques applicable to documenting work performed and testing procedures
- object-oriented 3-D programming design methodologies and principles
- features and functions of different prototyping tools applicable to designing interactive 3-D applications
- data sources and business expectations and needs applicable to designing interactive 3-D applications
- different interactions between users and 3-D environments
- techniques for designing and using a graphical user interface (GUI) to interact with users
- organisational and testing procedures applicable to 3-D application design process
- procedures for using 3-D technologies to simulate scientific or mathematical models.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- applicable 3-D equipment, software and hardware
- prototyping tools applicable to designing interactive 3-D applications
- technical manuals
- examples of scientific or mathematical models
- organisational procedures applicable to designing 3-D applications.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM537 Prepare games for different platforms and delivery modes

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to prepare game packages for delivery across multiple system platforms using applicable cross-platform software and hardware.

It applies to those with games programming skills and other personnel working in the game development industry.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare game package for multiple platforms	1.1 Establish project requirements for pre-existing game according to organisational procedures 1.2 Obtain pre-existing game package 1.3 Research and identify cross-platform specific installation methods and applicable software and hardware according to business needs 1.4 Select and confirm cross-platform specific installation methods according to project requirements 1.5 Package game for multiple platforms using selected installation methods according to vendor requirements
2. Develop cross-platform	2.1 Compare and select industry standard cross-platform

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ELEMENT	PERFORMANCE CRITERIA
project	integrated development environments (IDE) according to project requirements 2.2 Identify cross-platform renderer libraries, physics libraries, audio libraries and network libraries applicable to project requirements 2.3 Source and compile cross-platform libraries 2.4 Compile project for multiple platforms 2.5 Test and debug cross-platform project and evaluate results 2.6 Apply changes to cross-platform project as required according to test results
3. Finalise cross-platform project	3.1 Identify and document issues and resolutions in cross-platform development 3.2 Submit cross-platform project to required personnel and obtain final sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Learning	• Extends knowledge of delivery modes and platforms by incorporating results of trialling and testing
Reading	• Interprets, analyses and comprehends complex instructions, briefs, numerical code, technical data and conceptual information to inform job requirements
Writing	• Produces documentation detailing issues identified and work performed as required using specific technical language
Planning and organising	• Plans, organises and completes work according to defined requirements and schedules
Problem solving	• Uses systematic and analytical processes in complex, routine and non-routine situations gathering information, identifying potential solutions and evaluating options
Self-management	• Takes responsibility for decisions regarding end-product testing and data integrity and management
Technology	• Sources applications or tools with the potential to meet development requirements

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Unit Mapping Information

Supersedes and is equivalent to ICTGAM510 Prepare games for different platforms and delivery modes.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM537 Prepare games for different platforms and delivery modes

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- produce a cross-platform game project for delivery across, at least three different platforms, according to project requirements.

In the course of the above, the candidate must:

- identify and use cross-platform integrated development environment (IDE) libraries and installers
- use platform-specific input devices
- document issues identified and work performed for cross-platform development.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- features and functions of industry standard cross-platform software, hardware, installation methods and IDEs
- evaluation techniques for cross-platform development libraries
- research methods for cross-platform development and distribution
- different sources of cross-platform libraries
- testing and debugging procedures relating to the preparation of game packages for different platforms and delivery modes
- industry standard platform-specific input devices.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

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This includes access to:

- hardware and software applicable to preparation of game packages for different platforms and delivery modes
- project requirements
- pre-existing game package
- games engine
- file storage
- digital devices running various operating systems
- cross-platform IDEs and libraries
- installers for product distribution
- the internet.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM538 Manage testing of games and interactive media

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to define requirements and procedures and manage testing of games and interactive media to enable timely product release.

It applies to those who ensure the delivery of well-tested, quality software products in the marketplace.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine quality requirements statement that will enable product release	1.1 Review product in market and determine high-level requirements provided by product for expected clients 1.2 Define releasable product enable limited release and complete product release according to industry requirements 1.3 Summarise findings into quality requirements statement, according to industry and organisational requirements 1.4 Confirm client requirements and development specifications align with product release requirements
2. Define product test plan according to quality requirements statement	2.1 Identify expected test cycles during software development life cycle according to development methodology in use and product release quality

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ELEMENT	PERFORMANCE CRITERIA
	requirements 2.2 Determine types of testing to be performed during test cycles according to quality requirements 2.3 Determine testing methods to be used to implement testing types defined for identified test cycles 2.4 Define testing technique to be used and determine test cases and analyse results 2.5 Perform test cycle and determine acceptable balances of cost, quality and risk, and confirm with upper management and development team 2.6 Select test-support software according to testing requirements 2.7 Define implementation details for agreed testing and team responsible for testing management 2.8 Define reporting details for testing throughout product life cycle 2.9 Confirm test plan completeness using available completeness techniques 2.10 Document defined testing procedures and plan according to industry and organisational standards 2.11 Confirm test plan with development team and management
3. Manage testing processes	3.1 Install and configure selected test-support software according to vendor requirements 3.2 Perform product testing according to defined test plan and organisational procedures 3.3 Manage and report on development of test cases, test cycle status and outstanding bug status 3.4 Report on status of product testing 3.5 Update test plan and schedule according to changing development conditions and notify management as required 3.6 Evaluate results and handle and resolve bugs as required 3.7 Manage test environment, including setup, receipt of test builds and clean-up according to organisational procedures
4. Finalise testing for release	4.1 Document and produce testing results for management review prior to release 4.2 Manage test product freeze for final release and final test run 4.3 Confirm product quality and product release

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ELEMENT	PERFORMANCE CRITERIA
	requirements have been met

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	• Interprets, analyses and comprehends product expectations and conceptual information to inform job requirements
Writing	• Produces documentation detailing testing plan and procedures as required using specific technical language in order to convey explicit information
Oral Communication	• Uses listening and questioning techniques to obtain required information using appropriate industry language for intended audience
Numeracy	• Interprets budgetary information to enable decision-making during product test-cycle
Planning and organising	• Plans, organises and completes work according to defined requirements and schedules, sequencing tasks to achieve efficient outcomes
Problem solving	• Makes critical decisions systematically in complex situations, taking into consideration a range of variables, including outcomes of previous decisions
Self-management	• Evaluates effectiveness of products to inform strategic decisions

Unit Mapping Information

Supersedes and is equivalent to ICTGAM511 Manage testing of games and interactive media.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM538 Manage testing of games and interactive media

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- manage testing of a game or interactive media product according to quality requirements on at least one occasion.

In the course of the above, the candidate must:

- develop a quality requirements statement according to industry and organisational requirements
- define quality requirements and test plan
- identify bugs and issues and amend accordingly
- maintain ongoing management of testing process
- report on process to required personnel
- document work performed according to organisational procedures.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- client requirements for platforms, hardware and software
- client system requirements, both functional and non-functional
- procedures for bug or issue management and identification
- legislative and organisational requirements, standards and procedures applicable to games and interactive media testing
- industry and organisational criteria for limited product release and complete product release
- phases of software development life cycles
- different development methodologies applicable to creating games and interactive media
- elements of a quality requirements statement and processes of development

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- test reporting requirements applicable to game and interactive media testing
- test plan creation procedures applicable to game and interactive media development
- testing techniques, methods, test types, test cases, test cycles and system dissection applicable to game and interactive media development
- features and functions of industry standard test-support software
- completeness testing techniques
- installation and configuration processes for test-support software, including:
  - bug tracking processes and defining bug description fields
  - test case management software
  - test cycle management and reporting software
  - automated test tools
- bug resolution methods in game and interactive media products
- documentation techniques and processes used in product testing management.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- product undergoing development with specifications
- client requirements for product quality requirements
- testing support software
- test environment
- hardware required in product testing processes
- organisational procedures applicable to games and interactive media testing.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM539 Create and implement designs for 3-D games environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to create and implement designs within the context of a 3-D games environment.

It applies to individuals with highly developed communication and technical skills working as concept artists, game designers, games programmers, animators, and other personnel working in the game development industry.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1.Prepare to create designs	1.1 Establish task, design and user requirements and analyse game environment according to organisational procedures 1.2 Discuss and select 3-D modelling software for production of designs, and ramifications of using selected software with required personnel 1.3 Discuss and select 2-D image-editing software for textures with required personnel according to task requirements

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Determine and document 3-D production considerations for available hardware 1.5 Create file archiving system for storing 3-D components, models and versions according to organisational procedures 1.6 Establish project development pipeline and production deadlines, according to task requirements
2. Develop designs for 3-D games	2.1 Establish design theme and determine required modelling assets according to design requirements 2.2 Prioritise design components according to task requirements 2.3 Produce new document and create designs according to production pipeline, theme, and deadlines
3. Implement and finalise designs	3.1 Test functionality of designs on different browsers and devices 3.2 Confirm design meets task and user requirements 3.3 Implement design into applicable game environment, according to organisational procedures 3.4 Document work performed according to organisational procedures 3.5 Obtain final sign-off from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	• Interprets, analyses and comprehends conceptual information to inform job requirements
Writing	• Prepares documents detailing findings and work performed using appropriate layout and required descriptive language in a cohesive and well-structured manner • Develops material regarding the advantages, and limitations of, different technologies using explicit language to convey information and requirements
Oral Communication	• Uses listening and questioning techniques to obtain required information using appropriate industry language for intended audience
Initiative and enterprise	• Uses creativity and initiative in 3-D game design
Planning and	• Plans, organises and completes work according to defined

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Skill	Description
organising	requirements and schedules taking responsibility for decisions and sequencing tasks
Self-management	• Sources, analyses, and evaluates applications with potential to meet 3-D game design requirements • Uses a systematic process to evaluate work and implement improvements
Technology	• Completes design tasks using key features of specific digital systems and tools • Identifies importance of file structure and takes responsibility for data integrity and management

Unit Mapping Information

Supersedes and is equivalent to ICTGAM512 Create and implement designs for a 3-D games environment.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM539 Create and implement designs for 3-D games environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- create and implement at least two designs for a specified 3-D games environment.

In the course of the above, the candidate must:

- discuss and identify the most applicable technology for 3-D games development
- create and develop design documents for 3-D effects, including timelines for completion and file archiving system
- identify purpose of games design and establish target audience
- discuss and analyse design requirements for at least two different browsers and at least two different devices
- render designs on at least one small device and one large device and confirm pixels are optimised.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- concepts of animation techniques and digital effects generation relating to creating designs for 3-D game environments
- design principles applicable to 3-D game designs
- features of different 3-D game environments
- features and functions of industry standard 2-D and 3-D graphics editing software
- different modelling assets used in design creation for 3-D environments
- project development processes applicable to design creation for 3-D environments
- design functionality testing processes
- industry standard graphics formats for different 3-D games
- organisational procedures applicable to creating and implementing designs for 3-D games.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- project brief
- hardware and software required to create and implement designs
- games engine
- file storage
- browsers and devices
- organisational procedures applicable to creating and implementing designs for 3-D games.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM540 Design and create models for 3-D and digital effects environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to design and create models for a 3-D and digital effects environment using complex topology, specified geometry surfaces and advanced model builds.

It applies to those with high-level mathematical, technical and communication skills working as concept artists, game designers, games programmers, animators and other personnel working in the game development industry.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare and plan 3-D modelling process	1.1 Obtain project brief and identify 3-D model requirements and user needs according to organisational procedures 1.2 Research and collect portfolio of reference material according to organisational procedures 1.3 Present portfolio of collected reference material to required personnel 1.4 Evaluate industry standard 3-D modelling and animation software and select according to model requirements 1.5 Develop and design a modelling plan using reference material

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ELEMENT	PERFORMANCE CRITERIA
	1.6 Seek feedback on modelling plan from required personnel and amend as required
2. Analyse resources and design 3-D model	2.1 Research different types of geometry and select most applicable according to 3-D model requirements 2.2 Document selected geometry choice and explain rationale according to organisational procedures 2.3 Evaluate industry standard concept development software and select software according to model requirements 2.4 Construct and test topology plan using chosen concept development software 2.5 Document and explain reasoning for choosing a particular modelling method 2.6 Assess and refine topology plan with required personnel
3. Construct 3-D model	3.1 Build 3-D model in chosen 3-D modelling and animation software according to modelling plan and specifications 3.2 Apply selected geometry choice to 3-D model 3.3 Make changes to geometry selection as required 3.4 Present near-finished product to required personnel and seek feedback 3.5 Evaluate feedback and incorporate into final design 3.6 Assess and refine model with required personnel and confirm model meets task requirements
4. Test and finalise 3-D model	4.1 Test and confirm final model functionality in 3-D and digital effects environments, according to organisational procedures 4.2 Obtain final sign-off on 3-D model from required personnel 4.3 Compose report on experience of working on a 3-D model and share findings

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	• Interprets, analyses, and comprehends conceptual and specification information to inform job requirements • Organises, evaluates and critiques ideas and information from a range of complex texts to determine which geometry and topology will suit 3-D model

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Skill	Description
Writing	• Prepares documents detailing advantages and limitations of different technologies using appropriate layout and required descriptive language in a cohesive and well-structured manner • Develops material about the advantages and limitations of different technologies, using clear language to convey information and requirements
Oral Communication	• Uses listening and open questioning techniques to obtain required information using appropriate industry language for intended audience
Numeracy	• Develops mathematical representations of three-dimensional surface of objects using whole numbers, decimals and percentages when manipulating measurement, scale, ratio, coordinates, colour, shading and other 3-D modelling elements • Interprets numerical data and deciphers technical charts, diagrams and other specifications
Planning and organising	• Sequences and schedules complex activities, monitors implementation and manages communication
Problem solving	• Makes a range of critical and non-critical decisions in relatively complex situations, taking a range of factors into account
Self-management	• Implements actions as per plan, making slight adjustments if necessary, and addressing some unexpected issues • Uses feedback and evaluation of results to inform decisions about future improvement
Technology	• Uses a broad range of features in digital applications for specific purposes

Unit Mapping Information

Supersedes and is equivalent to ICTGAM514 Design and create models for a 3-D and digital effects environment.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM540 Design and create models for 3-D and digital effects environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- use software and construct an advanced 3-D model according to plan, on at least one occasion.

In the course of the above, the candidate must:

- prepare a topology plan for 3-D model design using:
  - applicable industry terminology
  - applicable geometry surfaces
  - concept development software
  - feedback from others to refine plan
- seek feedback from required personnel and refine model
- render designs on at least one small device and one large device and confirm pixels are optimised
- confirm functionality of model on at least two different browsers and at least two different devices
- document work performed in designing and creating models.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods of sourcing reference material
- key aspects of modelling plans
- features and capabilities of different geometry surfaces, including:
  - NURBS
  - Sub-D

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  - Polygon
  - T-splines
- digital model development and testing process
- technology requirements and human resources required to create 3-D models, and their respective skills
- features and functions of box, edge-loop and patch modelling
- capabilities and constraints of 3-D modelling and animation packages and software and concept development software
- different types of geometry surfaces for models and their features
- purposes of scheduling production components in model development process
- features of topology plans and topology plan testing methods
- uses of storyboards and scripts
- organisational procedures applicable to creating 3-D models.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- hardware and software applicable to designing and creating 3-D models
- games engine
- file storage
- project brief
- the internet
- browsers and devices
- organisational procedures applicable to creating 3-D models.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM541 Design and create advanced particles, fluids and bodies for 3-D digital effects

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to design and create, advanced simulated effects in a 3-D and digital effects environment.

It applies to those with high-level mathematical, technical and communication skills working as concept artists, game designers, games programmers, animators and other personnel working in the game development industry.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*

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ELEMENT	PERFORMANCE CRITERIA
1. Prepare to create advanced simulated effects	1.1 Obtain design brief and requirements from required personnel according to organisational procedures 1.2 Analyse design requirements for particle systems, fluids and bodies according to brief and organisational documents 1.3 Identify where advanced simulated effects will fit into production pipeline 1.4 Identify factors influencing design approach to creating advanced simulated effects 1.5 Source and gather reference materials and maintain portfolio of references according to organisational procedures 1.6 Review and analyse media and techniques and gather ideas for simulated effects 1.7 Discuss solutions and approaches to creation of advanced simulated effects for 3-D environments according to design brief and organisational documents 1.8 Present design ideas and design considerations, with justification of choice of advanced simulated effects to required personnel
2. Finalise designs and plan approach to simulated effects	2.1 Adapt and finalise design according to feedback from required personnel 2.2 Identify skills and processes required for creating advanced simulated effects systems according to organisational procedures 2.3 Plan timeline to create advanced simulated effects according to design brief and requirements
3. Produce particles, fluids and bodies	3.1 Assist in production of advanced simulated effects using applicable programming languages and created code 3.2 Create prototype of advanced simulated effects according to finalised design using toolsets 3.3 Discuss implementation of effects with required personnel according to design requirements 3.4 Implement physics and forces to the advanced simulated effects according to design brief and requirements 3.5 Conduct testing of prototype according to organisational procedures 3.6 Review testing results and amend as required 3.7 Present created effects to required personnel for feedback
4. Finalise advanced simulated effects	4.1 Adapt advanced simulated effects and design as required, according to feedback 4.2 Refine advanced simulated effects according to design requirements

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ELEMENT	PERFORMANCE CRITERIA
	4.3 Document work and testing performed in development process according to organisational procedures 4.4 Present finalised advanced simulation effects in requested form, according to organisational procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Interprets, analyses and comprehends briefs, documents and conceptual information to inform job requirements
Writing	• Creates a cohesive and well-structured advanced simulation effects and documentation detailing work and testing performed using descriptive language
Oral Communication	• Uses listening and questioning techniques and effective mode of communication to articulate complex concepts and requirements using industry language for intended audience • Presents finalised advanced simulation effects using persuasive presentation techniques, plain English (translating games specific terminology where required)
Numeracy	• Manipulates measurement, scale, ratio, coordinates, colour, shading and other elements of radical 3-D effects using whole numbers, decimals and percentages
Problem solving	• Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering required information and identifying and evaluating options against agreed criteria • Deals with complex issues using intuition to identify general problem area and switching to analytical processes to clarify goals and key issues • Generates possible solutions using lateral thinking processes • Develops and shapes several options before making final choice, using a combination of lateral and analytical thinking to tailor and strengthen ideas according to needs, resources and constraints
Self-management	• Takes responsibility for own workload and negotiates some key aspects with others • Sequences and schedules complex activities, monitors implementation, and manages required communication • Implements actions according to plan, making slight adjustments if necessary and addressing some unexpected issues

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SKILL	DESCRIPTION
	• Identifies value of continuous improvement in own work context
Technology	• Improves personal productivity and optimises software functions for specific purposes using a broad range of application features • Manages and maintains files in a variety of storage media and formats and is beginning to establish, maintain and monitor electronic paper trails

Unit Mapping Information

Supersedes and is equivalent to ICTGAM515 Design and create advanced particles, fluids and bodies for 3-D digital effects.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM541 Design and create advanced particles, fluids and bodies for 3-D digital effects

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop at least three advanced simulation effects according to design brief and requirements.

In the course of the above, the candidate must:

- analyse design requirements and develop design documents according to organisational procedures
- use applicable effects including particles, fluids and rigid or soft bodies
- render digital effects on at least one small device and one large device and confirm pixels are optimised
- maintain portfolio of reference materials
- present pre-production portfolio demonstrating project research and development to required personnel
- seek evaluation and review from required personnel for finalised advanced simulation effects.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- programming languages and techniques required for creating 3-D digital effects
- overview of game development and production processes, including specific terminology
- design approaches to creating advanced simulated effects
- media and techniques used in designing and creating simulated effects
- key features of game-play hardware and software products
- technology requirements and human resources required in process of creating digital effects and each team member’s respective skills

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- methods of maintaining reference portfolios applicable in creating 3-D digital effects
- risk and critical path management techniques
- technical constraints that hardware imposes on:
  - software development
  - graphics requirements
  - code development
  - creative visual design
- techniques for applying concept development and visualisation skills
- methods of creating and testing 3-D digital effect prototypes
- documentation processes applicable in 3-D digital effects creation process
- creating and presenting pre-production portfolios demonstrating project research and development
- organisational procedures applicable to the design and creation of 3-D digital effects.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- hardware and software applicable to designing and creating simulated effects
- games engine
- IDE
- digital devices
- file storage
- design brief
- the internet
- organisational procedures applicable to designing and creating simulated effects.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM542 Animate 3-D characters for digital games

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to apply animation principles to develop an animated character and export character model into a game.

It applies to those with high-level mathematical, technical and communication skills working as concept artists, game designers, games programmers, animators, and other personnel working in the game development industry.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine 3-D character model for animation requirements	1.1 Obtain and analyse animation, storyboard and digital game requirements for 3-D character according to organisational procedures 1.2 Determine target environments for 3-D digital character animation according to digital game requirements 1.3 Establish required level of detail for 3-D character model animation 1.4 Determine work-flow sequences, task requirements and confirm production schedule deadlines are met 1.5 Research and select required games engine and platform according to digital game requirements

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ELEMENT	PERFORMANCE CRITERIA
	1.6 Select software tools according to production pipeline and selected games engine and platform
2. Create 3-D animations	2.1 Research and determine animation methodology applicable to task requirements 2.2 Animate first pass, applying animation principles and experimenting with techniques to produce required movements 2.3 Submit first pass to required personnel for feedback and approval 2.4 Adjust as required and refine animation in passes until storyboard requirements are achieved 2.5 Animate facial features with lip-syncing to match audio and design requirements of approved storyboard 2.6 Create primary animations as required according to task requirements
3. Finalise and export animations	3.1 Submit character animations to required personnel for final check 3.2 Finalise projects according to organisational and production procedures 3.3 Export animation and 3-D character model to required game engine 3.4 Test character animations in game engine and on different devices according to organisational procedures 3.5 Evaluate results and apply changes as required 3.6 Obtain final sign-off for character animations from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Interprets, analyses and comprehends workplace documentation and images to aid implementation of job requirements
Writing	• Creates required documents outlining complex design information according to industry standards and required formats
Oral Communication	• Uses listening and questioning techniques and effective mode of communication to articulate complex concepts and information using industry language for intended audience

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SKILL	DESCRIPTION
Numeracy	• Applies numerical skills to develop applications using whole numbers, decimals and percentages when manipulating measurement, scale, ratio, coordinates, colour, shading and other 3-D elements
Teamwork	• Implements strategies for a diverse range of colleagues and clients to build rapport and foster strong relationships
Initiative and enterprise	• Investigates new and innovative ideas to continuously improve work practices and processes
Planning and organising	• Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others, including required capabilities, efficiencies and effectiveness • Monitors progress of plans and schedules, reviews and changes these according to new demands and priorities
Problem solving	• Makes critical decisions quickly and intuitively in complex situations, taking into consideration a range of variables, including outcomes of previous decisions • Applies systematic and analytical decision-making processes for complex and non-routine situations
Self-management	• Selects, implements and seeks to improve protocols governing communications to clients and co-workers in a range of work contexts • Elicits feedback and provides feedback to others to improve self and workgroup behaviours
Technology	• Uses and investigates new digital technologies and applications to manage and manipulate data and communicate with others in a secure and stable digital environment

Unit Mapping Information

Supersedes and is equivalent to ICTGAM516 Animate a 3-D character for digital games.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM542 Animate 3-D characters for digital games

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop at least two animated character models according to digital game requirements.

In the course of the above, the candidate must:

- select tools compatible with target game engine and platform
- render art on at least one small device and one large device and confirm pixels are optimised
- export animated character model to target game engine according to organisational procedures
- test character animations in the game engine and on at least two different devices.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- 3-D animation principles including relevance of anatomy and physical movement
- different target environments for animated 3-D digital characters
- development processes for animating 3-D characters
- capabilities and constraints of game engines
- attributes of industry standard game-play hardware and software products
- different industry standard animation methodologies
- function of a graph curve editor
- risk and critical path management techniques applicable to 3-D character animation process
- shading, texturing, weight and anticipation techniques relating to animating 3-D characters
- transfer methodology, including rotoscope, hand key and motion capture

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- techniques for applying concept development and visualisation skills
- techniques for using storyboard and script production
- technology requirements and human resources required in the process of creating games
- the importance and advantages of client communication on project work
- budgeting and scheduling considerations for game design
- time management techniques in project development
- exporting and testing procedures for 3-D character animations
- organisational procedures applicable to 3-D character animation process.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- hardware, software and tools applicable to animating 3-D characters for digital games
- games engine and platform
- digital devices
- file storage
- the internet
- design brief
- organisational procedures applicable to 3-D character animation process.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM543 Produce digital animation sequences

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to produce a digital animation sequence for the 3-D and digital effects environment and complete a digital editing project.

It applies to those with high-level mathematical, technical and communication skills working as concept artists, game designers, games programmers, animators, and other personnel working in the game development industry.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Develop and source story and concept	1.1 Establish digital animation sequence requirements and applicable documentation for 3-D and digital effects requirements according to organisational procedures 1.2 Research and gather ideas for animation sequence according to organisational procedures 1.3 Produce treatment of an animation sequence according to established requirements
2. Develop plan and determine components required for animation sequence	2.1 Discuss and create production plan with required personnel according to digital animation sequence requirements 2.2 Develop storyboard detailing 3-D animation according to

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ELEMENT	PERFORMANCE CRITERIA
	animation sequence requirements 2.3 Create concept drawings and sketches for 3-D models 2.4 Gather and present evidence of reference material used for storyboard and concept drawings to required personnel and seek feedback 2.5 Adjust storyboard and concept drawings as required
3. Produce animation sequence using 3-D software	3.1 Research and select 3-D modelling and animation software according to digital animation sequence requirements 3.2 Create 3-D animation according to production plan 3.3 Select frames per second to use for animation according to animation sequence requirements 3.4 Create assets using references 3.5 Animate components of 3-D environment according to planned animation sequence 3.6 Using 3-D modelling and animation software, produce high-end lighting techniques
4. Render and finalise 3-D animation sequence	4.1 Select required resolution and aspect ratio according to animation sequence requirements 4.2 Render animated sequence using 3-D modelling software 4.3 Review rendered frames against initial storyboard concept and animation sequence requirements 4.4 Present rendered frames to required personnel and seek feedback 4.5 Apply changes as required and obtain final sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Interprets, analyses and comprehends workplace documentation and images to inform job requirements
Writing	• Creates required documents incorporating complex design information and ideas according to industry standards and required formats
Numeracy	• Applies numerical skills to develop sequences using whole numbers, decimals and percentages when manipulating measurement, scale, ratio, coordinates, colour, shading, and other 3-D elements

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SKILL	DESCRIPTION
Problem solving	• Makes a range of critical and non-critical decisions in relatively complex situations, analysing information and taking a range of factors into account • Identifies and applies some basic principles of analytical and lateral thinking
Self-management	• Takes responsibility for planning, organising and implementing tasks required to achieve outcomes • Implements actions as per plan, making slight adjustments if necessary, and addressing some unexpected issues
Technology	• Improves personal productivity and optimises software functions for specific purposes using a broad range of 3-D software application features • Manages and maintains files in a variety of storage media and formats

Unit Mapping Information

Supersedes and is equivalent to ICTGAM517 Produce a digital animation sequence.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM543 Produce digital animation sequences

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- create 3-D animation sequence with at least 720 frames using 3-D modelling and animation software.

In the course of the above, the candidate must:

- develop storyboards and concept drawings for 3-D animation and models according to production plans
- apply a variety of strategies to create an animation sequence using a 3-D environment
- develop finalised frame of animation in required resolution
- render animation sequence on at least one small device and one large device and confirm pixels are optimised.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- digital editing processes and techniques relating to animation sequence production
- rendering processes and techniques applicable to animation sequence production
- capabilities of digital editing and rendering software
- features and functions of different industry standard 3-D modelling and animation software
- technology requirements and human resources required to create games, including team member's skills
- technical constraints that hardware imposes on:
  - graphics requirements
  - code development
  - creative visual design

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- storyboard development processes
- organisational procedures applicable to producing digital animation sequences.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- hardware and software applicable to producing digital animation sequences
- animation sequence requirements brief
- games engine
- digital devices
- file storage
- the internet
- organisational procedures applicable to producing digital animation sequences.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM544 Animate physical attributes of models and elements

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to animate the required physical attributes of models and elements using 3-D modelling and animation software tools.

It applies to those with high-level mathematical, technical and communication skills working as concept artists, game designers, games programmers, animators, and other personnel working in the game development industry.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish project requirements and collect and use reference material	1.1 Establish project and animation requirements of models and elements, according to organisational procedures 1.2 Create storyboard sequence of required animation according to organisational procedures 1.3 Determine animation attribute sequence of objects according to created storyboard 1.4 Identify type of production and target platform for which 3-D digital animations are being created and select applicable 3-D modelling and animation software tools 1.5 Research and gather reference material applicable to animation requirements

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ELEMENT	PERFORMANCE CRITERIA
2. Prepare 3-D digital models using a variety of manipulating techniques	2.1 Research and select applicable animation methodology for required models 2.2 Confirm models' topology allows required deformation of objects and their parts, according to storyboard animation brief 2.3 Apply a variety of manipulation techniques according to model and element requirements 2.4 Refine animation attributes and confirm integrity of models and elements until storyboard requirements are met 2.5 Submit pre-model animation to required personnel for feedback and confirm storyboard objectives have been met 2.6 Make final adjustments as required according to feedback
3. Create required animations using a variety of animation tools	3.1 Animate object, applying animation principles and techniques to produce required motions 3.2 Submit animation to required personnel for approval 3.3 Make adjustments as required and refine animation in passes until storyboard requirements are achieved
4. Test and render 3-D digital model	4.1 Research and select applicable render engine according to project requirements 4.2 Render component for testing purposes using nominal lighting 4.3 Test against production plan and evaluate results 4.4 Continue manipulation process according to meet required effects 4.5 Evaluate final render, and confirm further client requirements are met 4.6 Prepare required render passes according to animation requirements 4.7 Render required component
5. Evaluate and finalise animation	5.1 Present edited material to required personnel, in applicable format for evaluation 5.2 Obtain final sign-off from required personnel 5.3 Make backup copies of files and complete workplace documentation, according to organisational procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Interprets and analyses reference sources and applies knowledge to project work
Writing	• Communicates complex relationships between ideas and information, matching style of writing to purpose and audience when creating storyboard and workplace documentation
Numeracy	• Applies manipulation techniques, animates objects and makes adjustments using mathematical and problem-solving strategies
Oral communication	• Uses listening and questioning techniques to determine client requirements and articulate ideas using specific language applicable to audience
Planning and organising	• Plans a range of routine and non-routine tasks, including collecting resources, determining storyboard sequences and selecting software tools
Problem solving	• Makes a range of critical and non-critical decisions in relatively complex situations, taking a range of factors into account
Self-management	• Implements actions as per plans, making slight adjustments if necessary and addressing some unexpected issues
Technology	• Uses a broad range of features of software applications for specific purposes • Manages and maintains files in a variety of storage media and formats

Unit Mapping Information

Supersedes and is equivalent to ICTGAM518 Animate physical attributes of models and elements.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM544 Animate physical attributes of models and elements

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- create at least two animated models using animation and rendering software, according to animation principles and storyboard requirements.

In the course of the above, the candidate must:

- prepare pre-model animation for approval using created storyboard sequence
- evaluate texture, quality and performance of models using lighting
- render 3-D digital models on at least one small device and one large device and confirm pixels are optimised
- present final 3-D digital models, together with supporting documentation including project brief, documents and concept art for approval
- comply with organisational procedures.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- principles and techniques of 3-D animation, lighting and modelling
- features and functions of industry standard 3-D modelling and animation software tools and render engines
- types of production and target platforms for which 3-D digital animations are created for
- industry standard animation methodology and processes
- how anatomy and physical movement is applicable to animation
- the importance and advantages of client communication when working on projects
- required budgeting and scheduling considerations during animation projects
- storyboard creation techniques
- script production techniques

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- manipulation techniques relating to animating models and elements
- application of industry standard game-play hardware and software products
- purpose of dope sheets
- principles of the graph curve editor for smooth animation
- physical attributes that create effects, including weight and anticipation
- purpose of rendering
- shading and texturing techniques applicable to animating physical attributes of models and elements
- transfer methodology, including rotoscoping hand key and motion capture
- 3-D digital model testing procedures
- organisational procedures applicable to animating models and elements.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- project brief
- hardware and software relating to animating physical attributes of models and elements
- games engine
- digital devices
- file storage
- the internet
- organisational procedures applicable to animating models and elements.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM545 Manage technical art and rigging in 3-D animations

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to design, implement, and manage 3-D animation rigs for objects using structural controls and construct hierarchies to formulate object geometry and skeletal rigs to a defined project brief.

The unit applies to those with high-level mathematical, technical and communication skills working as concept artists, game designers, games programmers, animators, and other personnel working in the game development industry.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Assess rig requirements	1.1 Determine and document model rigging requirements according to organisational requirements 1.2 Develop portfolio of reference materials according to rigging requirements 1.3 Determine and document range of model rigging software features 1.4 Submit documentation to required personnel and seek and respond to feedback
2. Plan rig	2.1 Analyse inner workings of object and select required skeletal and structural systems

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Analyse bones and joints behaviours and select orientations 2.3 Examine object geometry topologies and select required bone and joint placement 2.4 Analyse critical object movement and select required kinematics and hybrid solution 2.5 Record results for use in rigging implementation phase
3. Implement character skeleton requirements	3.1 Use 3-D software to place and orientate bones and joints according to rigging plan 3.2 Construct FK and IK requirements according to rigging plan 3.3 Construct required hierarchies and pivotal sets 3.4 Trial and refine rotations and movement attributes
4. Employ and implement character attributes and control handles	4.1 Construct specific driven attributes for manipulation purposes 4.2 Create and place control handles with required attributes, link control handles and improve animation procedures 4.3 Trial and refine controls and attributes and negotiate modifications 4.4 Skin and bind object geometry to created skeletal systems and mechanical structures
5. Test and refine rig integrity	5.1 Test and refine, object rig interaction 3 5.2 Test and refine geometry skeleton systems and mechanical structure interaction 5.3 Negotiate modifications with required personnel and action modifications
6. Produce animated sequences	6.1 Create 3-D animations of rigged models according to rigging requirements 6.2 Render completed animated sequences 6.3 Save and store animated sequences and use output file formats, standard naming conventions, and version-control protocols 6.4 Present 3-D animated sequences of rigged models to required personnel for evaluation by agreed deadlines

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Undertakes geometric calculations to deduce measurements, relationships between points, lines, angles and figures in space by using assumed properties of space
Oral communication	• Uses listening and questioning techniques and effective mode of communication to articulate complex concepts and present design using industry language for intended audience
Reading	• Interprets, analyses and comprehends briefs, documents and conceptual information to inform job requirements
Writing	• Transforms creative ideas and develops required documentation for specific audiences, using clear and detailed language
Teamwork	• Demonstrates an understanding and applies protocols governing what to communicate, with whom and how, when presenting work for evaluation, and negotiating modifications
Planning and organising	• Sequences and schedules complex activities, monitors implementation and manages communication • Implements actions as per the plan, making slight adjustments if necessary, and addressing some unexpected issues • Manages and maintains files securely in a variety of storage media and formats
Problem solving	• Makes a range of critical and non- critical decisions in relatively complex situations, taking a range of factors into account when planning, testing and refining rigs
Self-management	• Improves personal productivity and optimises software functions for specific purposes using a broad range of application features

Unit Mapping Information

Supersedes and is equivalent to ICTGAM519 Manage technical art and rigging in 3-D animation.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM545 Manage technical art and rigging in 3-D animations

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design, implement and manage rigs for objects according to production documentation and organisational procedures on at least two occasions.

In the course of the above, the candidate must:

- use and refine skeleton/structural and animation controls for optimal performance
- construct hierarchies to formulate specific controls
- combine and refine object geometry to skeletal/structural rigs
- create 3-D digital animated sequences of a rigged model
- meet production deadlines.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- basic 3-D digital animation methodologies for managing technical art and rigging in 3-D animation
- features of a range of delivery platforms applicable to managing technical art and rigging in 3-D animation
- geometry topology analysis procedure and methodology
- procedures for identifying physical attributes to animate and manage technical art and rigging in 3-D animation
- rigged 3-D modelling techniques
- theory of anatomy and structural systems in relation to 3-D animation techniques.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- computer hardware and software
- games engine
- file storage
- organisational procedures applicable to managing technical art and rigging in 3-D animations.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM546 Create and combine 3-D digital games and components

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to create compound models using industry software applicable to animation production process, according to a defined set of parameters.

It applies to those with high-level technical and analytical skills working as modellers or artists, in the game development industry.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine model creation requirements	1.1 Identify, analyse and follow design and model creation requirements, production documentation and organisational guidelines 1.2 Determine type of production for which 3-D digital models are being created 1.3 Research and select 3-D modelling software tools according to type of production for which 3-D digital models are being created
2. Research and create 3-D digital models using a variety of	2.1 Research and determine applicable modelling methodology

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ELEMENT	PERFORMANCE CRITERIA
modelling techniques	2.2 Apply a variety of modelling techniques according to model creation requirements 2.3 Create 3-D digital models according to model creation requirements 2.4 Seek feedback on 3-D digital models from required personnel and amend as required 2.4 Refine and confirm integrity of models according to organisational procedures
3. Combine 3-D models to create a scene	3.1 Combine 3-D models and create a scene according to design requirements 3.2 Submit models to required personnel and seek and respond to feedback
4. Render and finalise 3-D digital models using applicable render engine	4.1 Test rendering scene and adjust settings according to task requirements 4.2 Render final 3-D scene 4.3 Submit finalised model to required personnel and seek and respond to feedback
5. Back up work	5.1 Make required backup copies of files 5.2 Complete and lodge workplace documentation according to organisational policies and procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Uses whole numbers, decimals and percentages when manipulating measurement, scale, ratio, coordinates, colour, shading and other elements of 3-D animation
Oral Communication	• Uses listening and questioning techniques and effective mode of communication to articulate complex concepts and present information using industry language for intended audience
Reading	• Interprets, analyses and comprehends briefs, documents and conceptual information • Analyses texts and images to inform implementation of specifications
Writing	• Develops workplace documentation using industry specific language
Planning and	• Takes responsibility for planning and organising tasks required to

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SKILL	DESCRIPTION
organising	meet required outcomes
Problem solving	• Makes a range of critical and non-critical decisions in relatively complex situations, taking a range of factors into account • Analyses and applies some basic principles of analytical and lateral thinking when creating a concept
Self-management	• Implements actions as per plan, making slight adjustments if necessary and addressing some unexpected issues
Technology	• Uses a broad range of features in 3-D software applications for specific purposes • Manages and maintains files in a variety of storage media and formats

Unit Mapping Information

Supersedes and is equivalent to ICTGAM520 Create and combine 3-D digital games and components.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM546 Create and combine 3-D digital games and components

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design, build and combine at least two 3-D models to an organisation's specifications on at least two occasions.

- In the course of the above, the candidate must:
- combine 3-D models to build a scene that meets design requirements
- produce, circulate and store the final render of the scene.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- 3-D software interfaces for to creating and combining 3-D digital games and components
- capabilities and constraints of game engines
- game-play hardware and software products
- process of computer game development applicable to creating and combining 3-D digital games and components
- application of anatomy and physical movement to 3-D components
- graph curve editor and its application to 3-D digital component design
- physical attributes required to create effects, including weight and anticipation
- risk and critical path management applicable to creating and combining 3-D digital games and components
- techniques for applying concept-development skills
- techniques for applying concept-visualisation skills
- transfer methodology, including rotoscope, hand key and motion capture
- technology requirements and human resources required in the process of creating a game, including team members' skills

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- budgeting and scheduling considerations for game design.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- hardware and software
- design brief
- games engine
- file storage
- the internet.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM547 Create interactive 3-D environments for digital games

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to coordinate the design and technical elements of a smooth-running interactive 3-D environment.

It applies to those with high-level organisation and technical skills working as concept artists, game designers, games programmers, animators and other personnel working in the game development industry.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*

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ELEMENT	PERFORMANCE CRITERIA
1. Obtain design documents for 3-D environment and select software tools	1.1 Identify and confirm project brief, design requirements for 3-D environment and other applicable documents according to organisational procedures 1.2 Conceptualise design requirements according to project brief and other applicable documents 1.3 Discuss and determine design considerations and generate concept art for final environment design 1.4 Confirm all requirements are considered and included in design according to project brief 1.5 Identify and select applicable texturing tools, including painting, shading and texturing software according to 3-D environment requirements 1.6 Research and select applicable audio tools 1.7 Analyse and select 3-D modelling and animation software to be used 1.8 Document, explain and justify design decisions according to organisational procedures
2. Create 3-D environment	2.1 Implement basic geometry, flow and layout according to design requirements 2.2 Separate each section of environment into key parts and choose focal point for environment 2.3 Incorporate detail into focal point of level 2.4 Set reference for rest of environment using focal points 2.5 Integrate geometry and texturing and place models according to project brief 2.6 Carry out detailed pass of entire environment 2.7 Set up exterior and interior lighting 2.8 Incorporate sound and particle effects and perform optimisation as required 2.9 Perform final pass and finalise elements
3. Test and finalise 3-D environment	3.1 Test and debug 3-D environment and confirm functionality on different digital devices 3.2 Present finished 3-D environment to required personnel and amend according to feedback 3.2 Document and report how design decisions have met 3-D environment design requirements 3.4 Incorporate feedback in final design as required and obtain final sign-off from required personnel

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	• Interprets, analyses and comprehends briefs, documents and conceptual information to inform job requirements
Writing	• Prepares documentation detailing process and final design using comprehensive structure, layout and complex industry language
Oral Communication	• Uses listening and questioning techniques and effective mode of communication to articulate complex concepts and present design using industry language for intended audience
Numeracy	• Undertakes geometric calculations to deduce measurements, relationships between points, lines, angles and figures in space by using assumed properties of space
Planning and organising	• Takes responsibility for planning, organising and implementing tasks required to achieve outcomes
Problem solving	• Makes a range of critical and non- critical decisions in relatively complex situations, taking a range of factors into account • Identifies and applies some basic principles of analytical and lateral thinking
Self-management	• Implements actions as per the plan, making slight adjustments if necessary and addressing some unexpected issues
Technology	• Uses a broad range of features in 3-D software applications for specific purposes • Manages and maintains files in a variety of storage media and formats

Unit Mapping Information

Supersedes and is equivalent to ICTGAM521 Create interactive 3-D environments for digital games.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM547 Create interactive 3-D environments for digital games

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- deliver a final 3-D environment for a digital game, according to project brief, including:
  - production of concept art
  - documentation justifying and explaining design decisions.

In the course of the above, the candidate must:

- implement design requirements into a working 3-D environment
- create working interactions between user and the environment
- render 3-D environment on at least one small device and one large device and confirm pixels are optimised.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- required budgeting and scheduling considerations for game design
- digital game development processes
- concept art generation processes for 3-D environments
- capabilities of industry standard texturing and audio tools
- features and functions of industry standard 3-D modelling and animation software
- optimisation techniques applicable to creating interactive 3-D environments for digital games
- technology requirements and human resources required to create games, including the team's respective skills
- industry standard game-play hardware and software products, including constraints that products impose on graphics and code development and creative visual design
- testing and debugging procedures applicable to 3-D environment creation process

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- organisational procedures applicable to creating interactive 3-D environments for digital games.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- hardware and software required in creating interactive 3-D environments for digital games
- project and design brief
- games engine
- digital devices
- file storage
- the internet.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM548 Complete digital editing for 3-D and digital effects environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to edit a sequence in a 3-D environment and finalise the edit in required video format.

It applies to those with high-level technical and communication skills working as concept artists, game designers, games programmers, animators, and other personnel working in the game development industry.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Research digital editing techniques and software	1.1 Research industry-standard digital editing techniques according to organisational requirements 1.2 Determine required techniques applying in various scenarios 1.3 Research industry standard digital editing software 1.4 Identify and document technical limitations and constraints of rendering and editing processes
2. Prepare to perform digital editing for 3-D environment	2.1 Identify and confirm project requirements according to research and organisational requirements

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Obtain or develop storyboard for sequence 2.3 Obtain or create 3-D animation sequence in frames according to project requirements 2.4 Use suitable naming scheme for rendered frames and organise files into applicable folder structure
3. Apply digital editing techniques	3.1 Edit rendered frames and additional graphics into sequence outlined in storyboard 3.2 Apply program functions to create and insert graphics, transitions and special effects into animation 3.3 Implement sounds and music at required frame locations 3.4 Confirm file management process and requirements are maintained during editing process
4. Finalise digitally edited production	4.1 Resolve sound and transition errors using editing software 4.2 Test and evaluate final edit, and amend as required according to organisational procedures 4.3 Confirm production meets project requirements on different digital devices 4.4 Present finalised edit to required personnel in applicable video format 4.5 Receive and incorporate feedback as required 4.6 Obtain final sign-off from required personnel according to organisational procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Interprets, analyses and comprehends briefs, documents and conceptual information to inform job requirements
Writing	• Prepares documentation detailing process and work performed using comprehensive structure, layout and complex industry language
Oral Communication	• Uses listening and questioning techniques and effective mode of communication to articulate complex concepts and present finalised edit using industry language for intended audience
Numeracy	• Uses whole numbers, decimals and percentages when manipulating measurement, scale, ratio, coordinates, colour, shading and other

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SKILL	DESCRIPTION
	elements of a 3-D environment
Planning and organising	• Takes responsibility for planning, organising and implementing tasks required to achieve required outcomes
Problem solving	• Makes a range of critical and non-critical decisions in relatively complex situations • Uses analytical processes to decide on a course of action, establishing criteria for evaluating options and taking a range of factors into account
Self-management	• Implements actions as per plan, making slight adjustments if necessary and addressing some unexpected issues
Technology	• Uses a broad range of features in editing software applications for specific purposes • Manages and maintains files in a variety of storage media and formats

Unit Mapping Information

Supersedes and is equivalent to ICTGAM522 Complete digital editing for the 3-D and digital effects environment.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM548 Complete digital editing for 3-D and digital effects environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- edit a 3-D sequence by inserting graphics, special effects, sounds and music according to a storyboard.

In the course of the above, the candidate must:

- research and select digital editing techniques and software
- develop final version in required video format using editing software and feedback from others
- test 3-D sequence meets project requirements on at least one small device and one large device, and confirm pixels are optimised.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- digital editing and rendering processes and techniques
- capabilities and constraints of industry standard digital editing and rendering software
- technical constraints that hardware imposes on:
  - software development
  - graphics requirements
  - code development
  - creative visual design
- storyboard development process in 3-D environments
- program functions used to create and insert graphics, transitions and special effects into animation

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- sound and music implementation techniques used in digital editing for 3-D and digital effects environments
- testing procedures applicable to digital editing processes
- organisational procedures applicable to digital editing for 3-D and digital effects environments.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- hardware and software applicable to digital editing for 3-D and digital effects environments
- project brief
- games engine
- digital devices
- file storage
- the internet.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM549 Collaborate in design of 3-D game levels and environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to plan and implement the design of an interactive 3-D game in a team environment.

It applies to those with high-level technical and communication skills working as concept artists, game designers, games programmers, animators and other personnel working in the game development industry.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Research and plan design process	1.1 Establish project and 3-D game design requirements according to organisational needs 1.2 Research and select project planning methodology according to project requirements 1.3 Discuss and identify design practices and considerations in collaboration with other team members 1.4 Identify team roles and responsibilities applicable to level creation and design processes 1.5 Plan and implement a design process using time-management principles

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ELEMENT	PERFORMANCE CRITERIA
	1.6 Document stages of design process according to organisational procedures
2. Conceptualise 3-D environment design in collaboration with team	2.1 Identify key level specifications and purpose of 3-D environment 2.2 Gather and analyse reference materials in collaboration, and assist with visualisation of 3-D environment 2.3 Catalogue required objects of level environment 2.4 Research and select 3-D modelling and animation software, and painting, shading and texturing software required to create 3-D environment 2.5 Document design decisions made before and during design conceptualisation, according to organisational procedures 2.6 Produce concept art of designed environment according to project brief
3. Present conceptualised environment to peers and finalise project	3.1 Present conceptualised environment to peers and receive feedback 3.2 Report on how design decisions have met requirements for game-play elements 3.3 Justify why certain design decisions were made to required personnel 3.4 Evaluate and incorporate peer feedback to design as required 3.5 Implement and apply quality assurance principles to design according to organisational procedures 3.6 Finalise design decision documents in preparation for creating 3-D environment

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Interprets, analyses and comprehends briefs, instructions and conceptual information to inform job requirements
Writing	• Prepares documentation detailing decision-making process, design and instruction for specific audiences, using clear and detailed language
Oral	• Uses listening and questioning techniques and effective mode of

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SKILL	DESCRIPTION
Communication	communication to articulate complex concepts and present conceptualised environment to peers using relevant industry language
Teamwork	• Cooperates and collaborates with others to achieve shared outcomes
Planning and organising	• Takes responsibility for planning and organising tasks required to achieve outcomes, including coordinating tasks with others
Problem solving	• Makes a range of critical and non-critical decisions in relatively complex situations, using analytical processes to evaluate and choose applicable options • Analyses and applies some basic principles of analytical and lateral thinking
Technology	• Identifies ways in which digital systems and tools are used, or could be used, to achieve work goals for modelling and animation • Manages and maintains files in a variety of storage media and formats

Unit Mapping Information

Supersedes and is equivalent to ICTGAM523 Collaborate in the design of 3-D game levels and environments.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM549 Collaborate in design of 3-D game levels and environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- collaborate with others to plan and implement the design process for creating an interactive 3-D environment.

In the course of the above, the candidate must:

- produce and present draft design documents to produce an interactive 3-D environment
- gather reference materials and visualise 3-D environment, including environment profiles, game genre, game design and game-play elements
- gather feedback from peers to review and modify designs to create a finalised design for a 3-D environment
- render design on at least one small device and one large device and confirm pixels are optimised.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- required budgeting and scheduling considerations for game design
- capabilities and constraints of industry standard game engines
- features and functions of industry standard 3-D modelling and animation software, and painting, shading and texturing software
- process used for digital game development
- industry standard project planning methodology and processes
- design practices and considerations applicable to designing 3-D game levels and environments
- applicable time-management principles
- 3-D environment visualisation techniques

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- quality assurance principles applicable to 3-D design processes
- industry standard game-play hardware and software products, together with technical constraints that products impose on graphics and code development and creative visual design
- different team member roles and responsibilities required in designing 3-D game levels and environments
- technology and human resources required in the process of creating a game, including the team's respective skills
- organisational procedures applicable to designing 3-D game levels and environments.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- hardware and software applicable to designing 3-D game levels and environments
- project and design brief
- games engine
- digital devices
- file storage
- the internet
- organisational procedures applicable to designing 3-D game levels and environments.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM550 Integrate multiple data sources into interactive 3-D environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to integrate multiple data sources into interactive 3-D environments.

It applies to those with high-level technical and communication skills, working as concept artists, game designers, games programmers, animators, and other personnel working in the game development industry.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to integrate elements into interactive 3-D environment	1.1 Identify and confirm interactive 3-D environment requirements 1.2 Research and identify data sources that can be integrated into interactive 3-D environments according to organisational procedures 1.3 Obtain or create data sources according to interactive 3-D environment requirements 1.4 Identify tools and libraries required for integration of identified elements into 3-D environment 1.5 Research, review and document how tools work

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ELEMENT	PERFORMANCE CRITERIA
	according to organisational procedures
2. Integrate sources into interactive 3-D environment	2.1 Create prototypes and integrate elements into interactive 3-D environment using identified tools 2.2 Test integration of elements according to organisational procedures 2.3 Test functionality of 3-D environment on different digital devices 2.4 Review test results and amend interactive 3-D environment as required 2.5 Confirm elements' integrity is maintained during implementation
3. Evaluate and finalise completed 3-D environment	3.1 Present interactive 3-D environment to required personnel 3.2 Review feedback from presentation and adjust interactive 3-D environment as required 3.3 Evaluate and justify implementation and document use of data sources, tools and libraries according to organisational procedures 3.4 Obtain final sign-off from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Interprets, analyses and comprehends briefs, instructions and conceptual information to inform job requirements
Writing	• Documents tools functionality according to organisational procedures using required language for specific audiences

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SKILL	DESCRIPTION
Oral Communication	• Uses listening and questioning techniques and effective mode of communication to articulate complex concepts and present conceptualised environment to peers using relevant industry language
Initiative and enterprise	• Uses creativity and initiative in 3D design
Planning and organising	• Evaluates work and implements improvements using a systematic process
Self-management	• Plans, organises and completes work according to defined requirements and takes responsibility for decisions and sequencing tasks • Sources, analyses and evaluates data sources with potential to meet 3D design requirements
Technology	• Uses key features of specific digital systems and tools to complete design tasks

Unit Mapping Information

Supersedes and is equivalent to ICTGAM524 Integrate multiple data sources into interactive 3-D environments.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM550 Integrate multiple data sources into interactive 3-D environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- create and test prototypes that integrate at least one data source into a working interactive 3-D environment.

In the course of the above, the candidate must:

- research and obtain data sources, tools and libraries needed to integrate elements into an interactive 3-D environment
- select data sources to integrate according to the following:
  - 3-D environment
  - game design
  - game genre
  - game mechanics
  - game-play elements
  - level specifications
- test functionality of interactive 3-D environment on at least one small device and one large device and confirm pixels are optimised
- deliver 3-D environment with working interactions including all data sources and documented reasons for its implementation.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard data sources for different 3-D environments
- how game design, genre and mechanics, game-play elements and level specifications affect choice of data source

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- key features of game-play hardware and software products used for interactive 3-D environments, including any technical constraints imposed on design and development
- technology requirements and human resources required in the process of creating a game, including team members' respective skills
- data source creation processes applicable to interactive 3-D environments
- prototype development processes applicable to integrating elements into 3-D environments
- testing processes applicable to developing 3-D environments
- industry standard tools and libraries used to integrate elements into 3-D environments
- organisational procedures applicable to integration of multiple data sources into interactive 3-D environments.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- hardware, software, tools and libraries applicable to integrating multiple data sources into interactive 3-D environments
- digital devices
- data sources
- the internet
- 3-D environment requirements
- games engine
- file storage
- organisational procedures applicable to integration of multiple data sources into interactive 3-D environments.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM551 Apply digital texturing for the 3-D environment in digital games

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to research, select techniques and apply industry standard graphic software tools to digital texturing for the 3-D environment in digital games.

The unit applies to those with high-level technical, interpretive and communication skills, working as concept artists, game designers, games programmers, animators, and other personnel working in the game development industry.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Research industry practices	1.1 Research and identify methods of texture creation and texture mapping according to organisational requirements 1.2 Select graphics software to create textures according to organisational requirements 1.3 Document design considerations for texturing a 3-D environment according to organisational requirements
2. Create 3-D environments	2.1 Use 3-D modelling and animation software according to task requirements 2.2 Create simple 3-D objects

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ELEMENT	PERFORMANCE CRITERIA
	2.3 Place objects in a 3-D environment 2.4 Apply inbuilt lighting effects to 3-D environment
3. Create multiple textures	3.1 Create textures according to task requirements 3.2 Establish the look and the feel of the 3-D environment 3.3 Seek and respond to feedback from required personnel
4. Apply multiple texture effects	4.1 Load textures into 3-D animation and modelling software according to task requirements 4.2 Colour 3-D objects and environment 4.3 Create multiple texture effects for single 3-D object 4.4 Render image of 3-D environment according to task requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Uses whole numbers, decimals and percentages applicable to measurement, resolution aspect ratio, pixel ratio, scale, coordinates, colour, shading, and other attributes/variables in the application of digital effects
Oral communication	• Articulates requirements and responsibilities clearly and distinctively, using industry standard technical language intended for audience and environment
Reading	• Researches common industry practices to interpret technical design terminology • Interprets and comprehends a large range of diagrams, icons, symbols, text, numbers and letters, necessary to use complex design software
Writing	• Uses applicable spelling and grammar, plain English, specific terminology and required document layout when documenting methodologies and design considerations
Planning and organising	• Plans, organises and completes tasks according to defined requirements and schedules
Problem solving	• Makes decisions directly related to completion of required tasks • Uses creativity and initiative to visualise concepts • Sources, analyses and evaluates methodologies and software with the potential to meet 3-D texturing requirements

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SKILL	DESCRIPTION
Technology	• Uses key features of specific digital systems and software to complete

Unit Mapping Information

Supersedes and is equivalent to ICTGAM525 Apply digital texturing for the 3-D environment in digital games.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM551 Apply digital texturing for the 3-D environment in digital games

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- research, select and document suitable techniques and software to create texturing for a 3-D environment.

In the course of the above, the candidate must:

- use graphics software to create multiple textures for a 3-D environment
- produce a final rendered image of a 3-D environment that incorporates multiple texture effects for a single 3-D object.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- technology and human resources required in the process of creating textures for the 3-D environment
- capabilities and constraints of graphics software for texturing
- methods of texture creation and texture mapping
- design considerations for texturing including resource limitations and constraints, and target markets.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- computer hardware and software
- games engine

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- file storage
- the internet for research purposes.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM552 Create complex 3-D characters for games

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to plan, and implement, a design for complex 3-D characters for games.

The unit applies to those with high-level technical, interpretive and communication skills, working as concept artists, game designers, games programmers, animators and other personnel working in the game development industry.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Clarify work requirements	1.1 Identify design requirements according to project brief and documents 1.2 Conceptualise game environment characters, design, level specifications and genre according to project brief 1.3 Gather and analyse materials required to design and visualisation of 3-D character models 1.4 Identify texturing tools, including painting, shading and texturing software and 3-D modelling tools
2. Conceptualise 3-D character design	2.1 Determine and document design decisions according to project requirements 2.2 Determine and document key attributes of characters

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ELEMENT	PERFORMANCE CRITERIA
	2.3 Examine design considerations and generate 3-D characters concept art
3. Create complex 3-D characters	3.1 Create base 3-D character models according to design specifications 3.2 Refine and polish character models 3.3 Create and map 3-D character models textures 3.4 Refine textures and apply shaders according to design specifications 3.5 Check integrity and modify 3-D characters according to design specifications
4. Finalise 3-D character creation tasks	4.1 Present finished 3-D characters to required personnel and seek and respond to feedback 4.2 Report on how design decisions have met 3-D character's design requirements 4.3 Present 3-D model to required personnel and seek and respond to feedback

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Uses whole numbers, decimals and percentages applicable to measurement, resolution aspect ratio, pixel ratio, scale, coordinates, colour, shading, and other attributes/variables in the application of digital effects
Oral communication	• Articulates requirements and responsibilities clearly and distinctively, using industry standard technical language intended for audience and environment
Reading	• Interprets, analyses and comprehends briefs, instructions and conceptual information, to inform the design of environment specifications • Interprets large range of diagrams, icons, symbols, text, numbers and letters necessary to use complex design software
Writing	• Communicates software and graphics requirements and code development to others, using applicable spelling and grammar, plain English, and industry terminology
Planning and	• Plans, organises and completes work according to project brief and schedules, sequencing tasks to achieve efficient outcomes

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SKILL	DESCRIPTION
organising	• Sources and analyses reference materials to support 3-D character design
Problem solving	• Uses creativity and initiative in 3D character design and creation • Uses systematic, analytical processes in routine and non-routine

Unit Mapping Information

Supersedes and is equivalent to ICTGAM526 Create complex 3-D characters for games.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM552 Create complex 3-D characters for games

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- plan and manage design process for creating at least two 3-D character models according required design brief.

In the course of the above, the candidate must:

- incorporate design specifications and create complex 3-D character models
- produce and deliver documentation, showing evidence of concepts creation and design decisions.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- budgeting and scheduling considerations for game design
- process used for computer game development
- industry standard game-play hardware and software products, including technical constraints imposed on design and development
- technology and human resources required in the process of creating a game and outline the team members' respective skills.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- computer hardware and software
- games engine

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- file storage.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM553 Integrate database with online games

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to integrate a database with an online game, where the relationship between the game server and the database server is also considered a client-server relationship on a local area network.

The unit applies to those with high-level technical and problem-solving skills working as programmers, analyst programmers and game programmers responsible for the development of code to connect a computer game to a database.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Install application programming interfaces	1.1 Research application programming interfaces (APIs) according to client requirements 1.2 Identify specific APIs required for game architecture and data source provider 1.3 Install nominated APIs on game development computers according to technical specifications
2. Define and use connection to data source	2.1 Define required game data source connection parameters 2.2 Store connection parameters in required external text-based configuration file

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ELEMENT	PERFORMANCE CRITERIA
	2.3 Open and close connection to game data source
3. Configure and use connection pooling	3.1 Configure connection pooling in the database management system 3.2 Define connection pool parameters for minimum connections, maximum connections, and idle connections 3.3 Minimise use of database resources through connection pooling 3.4 Test and verify use of connection pooling according to organisational requirements
4. Pass embedded non/structured query language (SQL) to a database	4.1 Define database connection property 4.2 Compose structured query language (SQL) or non-SQL statement to be passed to database 4.3 Test, debug and execute the statement according to organisational requirements
5. Execute stored procedures	5.1 Call stored procedure on database and use command callable statement 5.2 Define and pass parameters to stored procedure 5.3 Test, debug and execute database stored procedure according to organisational requirements
6. Modify database data	6.1 Retrieve result sets from the database into game application domain 6.2 Insert new records into database 6.3 Update existing database records 6.4 Integrate data from forward-only and read-only cursor into game application domain 6.5 Incorporate data from updateable cursor into game application domain
7. Test and debug database integration code	7.1 Test database integration code and document results according to organisational requirements 7.2 Determine errors and exceptions and document solutions 7.3 Debug all errors and exceptions 7.4 Assess data modifications, identify and fix errors 7.5 Submit all documentation to required personnel and seek and respond to feedback

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Oral communication	• Articulates requirements and responsibilities distinctively using industry standard technical language intended for audience and environment
Reading	• Identifies and evaluates documents containing complex technical terminology to identify which APIs are suited to the game application domain and the game architecture
Writing	• Uses programming code, syntax and conventions to update, test and de-bug the database integration code • Documents test results and technical solutions, using applicable industry terminology
Planning and organising	• Plans, organises and completes work according to project brief and schedules, sequencing tasks to achieve efficient outcome
Problem solving	• Sources and analyses reference materials related to database integration • Uses creativity and initiative in database assessment and design • Uses systematic, analytical processes in complex, routine and non-routine situations, gathering information, evaluating options, and identifying solutions to coding problems
Technology	• Uses key features, of specific digital systems and software effectively to complete defined tasks

Unit Mapping Information

Supersedes and is equivalent to ICTGAM527 Integrate database with online game.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM553 Integrate database with online games

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- integrate, test and modify two sets of database data provided by game-play input and document all errors and solutions on at least two occasions.

In the course of the above, the candidate must:

- determine and install application programming interfaces (API) for games development
- define and add database functionality to an online game.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- relational database methodologies, including;
  - creating and testing stored procedures
  - 'embedded' structured query language (SQL) and assigning parameters in code for filtering
  - implementing relationships between tables
  - retrieving data from multiple tables using SQL
  - how inserts to tables in parent/child relationships can be implemented using artificial (auto-generated) primary key values
  - implementing cascading updates and deletes
- principles of game development applicable to integrating databases with online games
- principles of integrated development environments, including:
  - data access APIs and associated classes, required for the integration of a database with an online game
  - online help and documentation required for research and debugging code

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    - user authentication and authorisation management
- methodologies and techniques required for effective and well-factored object-oriented program (OOP) code, including:
    - class implementation
    - control of logic flow
    - use of collections and lists
    - use of OOP concepts, including inheritance, encapsulation and overloading
- implications of web development on games integration.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- the game design specification and requirements documentation
- a game server
- a database server
- integrated development environment software and hardware
- browsers for game engine for console-based games.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM554 Create games for mobile devices

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to use innovative game development strategies to create games for mobile devices.

The unit applies to those with high-level technical, creative and communication skills working as concept artists, games designers, games programmers, animators, and other personnel working in the game development industry.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Research and document mobile gaming device technologies	1.1 Research and document mobile devices suitable for games 1.2 Identity required mobile device according to project requirements 1.3 Identify technical limitations and constraints of the mobile gaming device 1.4 Research and identify tools and technology for creating applications for the mobile device 1.5 Identify a suitable tool for the mobile gaming device
2. Plan project	2.1 Determine requirements from organisational project brief and documents

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Identify game production assets according to creative and production requirements and technical specifications 2.3 Define and document developer roles and skills according to project requirements 2.4 Create and document schedule for production and testing 2.5 Determine and document strategies for monitoring production progress against schedule
3. Develop a game prototype	3.1 Create graphics, music and sound assets 3.2 Develop game prototype according to technical specifications 3.3 Create and check game-play elements, according to creative and technical requirements 3.4 Test and run game play on mobile devices and determine alignment to plans 3.4 Identify whether game meets creative, production and technical requirements
4. Evaluate game prototype	4.1 Demonstrate initial prototype to required personnel 4.2 Evaluate prototype performance against criteria 4.3 Seek and respond to user feedback 4.4 Confirm endorsement from required personnel to develop the prototype into complete product
5. Transform prototype into a final proof-of-concept prototype	5.1 Make finalised changes to prototype according to evaluation and feedback 5.2 Integrate all game elements as required by specifications 5.3 Polish the game according to project requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Oral communication	• Uses listening and questioning techniques and effective mode of communication to articulate complex ideas using industry language for intended audience

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SKILL	DESCRIPTION
Reading	• Interprets and analyses briefs, instructions, and conceptual information to inform design specifications • Interprets large range of diagrams, icons, symbols, text, numbers, and letters necessary to use complex programming software
Writing	• Uses plain English and industry terminologies when documenting plans and schedules • Develops an interactive product using complex programming language
Teamwork	• Collaborates with others as part of familiar routine activities to achieve requirements
Planning and organising	• Plans work schedules and organises and completes tasks required to achieve outcomes
Problem solving	• Uses creativity and initiative in game design • Uses systematic, analytical processes in routine and non-routine situations, conducting evaluations, gathering information and assessing potential solutions
Self-management	• Sources information, applications and tools with the potential to meet the development requirements
Technology	• Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world

Unit Mapping Information

Supersedes and is equivalent to ICTGAM528 Create games for mobile devices.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM554 Create games for mobile devices

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- produce and demonstrate an original working game on a mobile device.

In the course of the above, the candidate must:

- document plans and schedules applicable to game development
- implement game development and production strategies
- apply strategies for trialling and testing game prototypes
- evaluate whether games meet design brief, creative and technical requirements.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- leading industry standard mobile game devices
- leading tools and technologies needed for creating applications on mobile devices products
- technical constraints that mobile devices place on design and development of games
- suitable programming languages for mobile devices
- budgeting and scheduling considerations for game design
- importance of risk assessment and critical path planning applicable to creating games for mobile devices
- human resources required in the process of creating a game for a mobile device and outline the team members' respective skills.
- techniques for concept visualisation and development.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- computer hardware and software
- games engine
- file storage
- integrated development environments
- mobile devices.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM555 Analyse business opportunities in the digital games environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to research the digital games industry climate and analyse business opportunities.

The unit applies to those with high-level technical, creative and communication skills working as concept artists, games designers, games programmers, animators and other personnel working in the game development industry.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine Australian digital games industry	1.1 Identify large and small organisations in Australian digital games industry and their recent projects 1.2 Identify target market and determine key traits and habits of users 1.3 Identify methods of marketing to identified target market 1.3 Identify resources required to produce a digital game in a small business environment 1.4 Determine process of subcontracting production

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ELEMENT	PERFORMANCE CRITERIA
	elements to other small businesses according to organisational policies and procedures
2. Determine structure game-development team	2.1 Identify roles of engineers, artists, game designers, producers and personnel requirements 2.2 Identify required skill set to occupy each role in game development team 2.3 Determine interaction and collaboration between identified roles
3. Investigate process of starting an independent game development business	3.1 Identify major factors involved in starting a small business in the digital games industry 3.2 Identify legal requirements, environmental impact, sustainability considerations and financial management of operating a small business 3.3 Identify legal protection of small business operator and dissolution procedures for a small business
4. Evaluate role of government and organisations related to digital game production	4.1 Identify role of Australian government and other organisations affecting the digital games industry 4.2 Identify influence of Australian government in game production and marketing 4.3 Determine effect of rating standards on digital game production and marketing
5. Review and document copyright and intellectual property laws	5.1 Determine copyright and intellectual property laws related to digital game development 5.2 Review and determine state of national and international copyright pertaining to digital game assets 5.3 Incorporate conventions of copyright related to production of a digital game project 5.4 Lodge all documentation according to organisational policies and procedures, as required

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Identifies, confirms and incorporates legislative requirements of business operations • Investigates new and innovative ideas to identify business

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SKILL	DESCRIPTION
	opportunities
Numeracy	• Analyses the budgetary requirements for the creation of a digital game in a small business environment
Reading	• Interprets and analyses information from a range of relatively complex sources, including legislation
Writing	• Documents results of research, analysis and reviews to inform analysis of business opportunities and requirements
Planning and organising	• Systematically plans tasks to gather required information to build understanding of the digital games environment
Problem solving	• Makes critical decisions in complex situations, taking a range of variables into consideration
Technology	• Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world

Unit Mapping Information

Supersedes and is equivalent to ICTGAM529 Analyse business opportunities in the digital games environment.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM555 Analyse business opportunities in the digital games environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- research and document at least five factors when starting up and operating a small business in the digital games industry on at least one occasion.

In the course of the above, the candidate must:

- research key organisations and types of projects undertaken in the digital games industry
- document resources, roles and skills requirements of a gaming development team, and the interaction required between team members
- document business models and revenue ideas for commercial game.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- sources of information about the Australian digital games industry
- process of subcontracting
- various methods that could be used to allow interaction and collaboration between different members of a development team
- how rating standards affect digital game production and marketing
- risk and critical-path management relating to analysing business opportunities in the digital games environments
- copyright and intellectual property laws as they pertain to the development of digital games.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- computer hardware and software
- games engine
- file storage
- the internet for research purposes
- legislation, including copyright and intellectual property legislation, and work health and safety legislation applicable to analysing business opportunities in the digital games environments.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM556 Develop and implement physics in 3-D digital games

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to integrate a physics, and rendering, engine into a 3-D digital game.

The unit applies to those with high-level technical and mathematical skills working as game engine developers, gameplay programmers and other personnel working in the game development industry.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Develop a game world system	1.1 Develop code and create instances of rendering engine 1.2 Develop scene manager and physics engine's world objects 1.3 Constrain frame rate to a desired frame rate
2. Develop components	2.1 Create and implement game physics system requirements 2.2 Implement game object primitives 2.3 Use physics debugger and show collision frames
3. Develop constraint dynamics	3.1 Generate required game objects and physics bodies constrained by joints and springs 3.2 Build ragdoll using game physics system
4. Develop physics	4.1 Ray cast scene

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ELEMENT	PERFORMANCE CRITERIA
interactivity	4.2 Implement player-controlled model 4.3 Implement and develop required game physics system models
5. Develop an interactive scene	5.1 Build scene 5.2 Use trigger volumes to fire off events 5.3 Capture the collision events with call-backs 5.4 Respond to collision events
6. Compile a report	6.1 Build class diagrams for required objects 6.2 Document methodologies used to create interactivity 6.3 Document inventory of utilised objects and how they were used 6.4 Document libraries used 6.5 Submit documentation to required personnel and seek and respond to feedback

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Uses complex physics to simulate the world by creating mathematical models which measure mass • Computes algorithms to regulate time and speed • Interprets matrix-related functions to determine rate and scale • Completes algorithmic geometry to determine the relationship between points, angles, lines, surfaces and solids
Reading	• Recognises and interprets technical, manufacturer and organisational documentation to determine and confirm job requirements
Writing	• Creates cohesive and well-structured documents using required spelling and grammar, together with required programming code, syntax and conventions
Planning and organising	• Plans, organises and completes work according to defined requirements and schedules
Problem solving	• Uses the key features of, specific digital systems and tools, and operates them effectively to complete design tasks • Uses creativity and initiative in the application of game physics • Uses a systematic process to evaluate work, implement

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SKILL	DESCRIPTION
	improvements and solve problems
Self-management	• Takes full responsibility for identifying and considering organisational protocols and requirements

Unit Mapping Information

Supersedes and is equivalent to ICTGAM530 Develop and implement physics in a 3-D digital game.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM556 Develop and implement physics in 3-D digital games

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify, evaluate, and develop one interactive game that implements game physics on at least two occasions.

In the course of the above, the candidate must:

- use and document a physics library.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- basic programming techniques needed to develop game objects
- integration issues of common physics concepts in games design
- industry standard game-play hardware and software products, including any technical constraints they impose on design and development
- human resources required in the process of creating a game
- techniques for applying concept development and visualisation skills.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- suitable development environment
- physics libraries
- computer hardware and software

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- games engine
- file storage.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTGAM557 Complete compositing to create elements for 3-D and digital effects environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to determine design requirements, plan, create and store composite photographic and 3-D digital effects elements.

The unit applies to those with high-level information technology skills working as compositors, matte painters, concept artists, modellers, animators, game designers, directors and other personnel working in the film, television and game development industries.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Confirm compositing requirements	1.1 Determine and document compositing brief from organisational specifications and requirements 1.2 Plan and schedule compositing work according to design requirements 1.3 Identify software tools, equipment and media required for compositing work 1.4 Determine and document technical aspects of proposed compositing 1.5 Submit documentation to required personnel and obtain conformation of specifications

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ELEMENT	PERFORMANCE CRITERIA
2. Prepare elements for compositing	2.1 Select resolution and aspect ratio for final composited output according to design requirements 2.2 Identify and obtain source plates and layers, images and other elements required for compositing 2.3 Modify elements and create additional elements, as required 2.4 Generate mattes according to design requirements
3. Composite images	3.1 Track and stabilise required images 3.2 Match cameras, lighting and shadows, and add motion blur to composite 3.3 Integrate plates, layers, elements and incorporate grain 3.4 Present test composites to required personnel and seek and respond to feedback
4. Finalise composite image tasks	4.1 Optimise composited images and complete rendering 4.2 Store rendered files in specified output format 4.3 Review completed render and align quality and compliance with system 4.4 Present final composited images to required personnel and seek and respond to feedback

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Determines the proportional relationship between the width, height and ratio of the final output
Oral communication	• Uses listening and questioning techniques and effective mode of communication to articulate complex concepts and requirements using industry language for intended audience
Reading	• Interprets and analyses brief, instructions, technical and conceptual documentation and images to a 3-D and digital games environment
Writing	• Prepares documentation expressing work performed using appropriate structure, layout and technical programming language
Teamwork	• Negotiates in a variety of contexts, with suppliers, colleagues or clients
Planning and organising	• Plans, organises and completes work according to defined brief and schedules

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SKILL	DESCRIPTION
Problem solving	• Uses creativity and initiative in compositing • Uses a systematic process to evaluate work, implement improvements and solve problems
Self-management	• Sources, analyses and evaluates applications, tools and media with the potential to meet compositing requirements
Technology	• Uses key features of specific digital systems and tools to complete compositing tasks

Unit Mapping Information

Supersedes and is equivalent to ICTGAM531 Complete compositing to create elements for the 3-D and digital effects environment.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM557 Complete compositing to create elements for 3-D and digital effects environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop a compositing brief, schedule compositing work and complete composting tasks to predetermined specifications.

In the course of the above, the candidate must:

- communicate with others to discuss requirements and technical aspects of the job
- complete compositing tasks to the required level of quality, according to the brief
- refine elements for consistency, optimal image quality and visual impact
- adhere to system requirements related to file size, format and storage.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- 3-D modelling, animation and visual effects development required to completing compositing to create elements for 3-D and digital effects environments
- aspect ratios for image output
- camera, lighting and shadow matching applicable to completing compositing to create elements for 3-D and digital effects environments
- efficient sizes and required formats for composited files
- requirements for scheduling and sequencing production and post-production tasks
- range of compositing software available
- rendering principles applicable to completing compositing to create elements for 3-D and digital effects environments.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- computer hardware and software
- games engine
- file storage
- compositing and output documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT213 Use computer operating systems and hardware

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to select, install, configure and use computer operating systems and basic computer hardware. This involves configuring the operating system to work with a variety of hardware peripherals and types of information and communications technology (ICT) equipment.

It applies to those who work under supervision and provide support to others. This includes individuals who apply a range of configuration skills to use and solve issues in operating systems and hardware.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify operating system and hardware components	1.1 Identify and discuss differences between industry standard computer operating systems 1.2 Determine ICT organisational requirements and specifications 1.3 Identify and select operating system and application software according to required task 1.4 Identify internal and external hardware components
2. Install and configure operating system,	2.1 Identify relationship between application software, operating system and hardware

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ELEMENT	PERFORMANCE CRITERIA
application software and hardware components	2.2 Install and configure operating system according to organisational requirements 2.3 Identify functions associated with operating system and associated boot process 2.4 Use graphical user interface and command line interface and perform basic tasks according to task requirements 2.5 Install and configure application software on operating system 2.6 Configure operating system to work with required hardware components according to organisational procedures
3. Optimise operating system and hardware components and seek feedback	3.1 Optimise operating system using tools and vendor utilities 3.2 Customise graphical user interface and command line interface using command line techniques 3.3 Install identified hardware drivers and check functionality 3.4 Seek review and feedback from required personnel and confirm actions were completed

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Identifies and reviews both on-line and hard-copy text with terminology applicable to ICT industry and applies this knowledge in using and configuring computer operating systems • Interprets and comprehends diagrams, icons, symbols, text, numbers and letters required in installing and configuring operating systems, software and hardware
Writing	• Inputs commands using systems related syntax, text and numbers • Uses required terminology, text, letters and numbers in responding to computer generated prompts
Planning and organising	• Plans routine tasks with goals and outcomes, taking limited responsibility in decisions regarding sequencing and timing
Technology	• Identifies purposes and uses specific functions and key features of basic digital systems and tools

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Unit Mapping Information

Supersedes and is equivalent to ICTICT201 Use computer operating systems and hardware.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT213 Use computer operating systems and hardware

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- select, install, configure and use a computer operating system
- install, configure and run at least one application software and at least one supporting hardware component
- optimise at least one operating system using tools, drivers and vendor utilities.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- basic specifications of operating systems, hardware and applications software products
- compatibility and functions of operating systems, in respect to other versions
- operating system optimisation tools and vendor utilities
- functions and features of boot process
- command line techniques
- vendor utilities
- organisational guidelines, procedures requirements and specifications.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- hardware components including required software and drivers
- industry standard operating system and application software
- software configuration guides.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT214 Operate application software packages

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to identify, select and operate commercial software packages, including a word-processing and a spreadsheet application package.

It applies to individuals who utilise different software applications within a small to large office environment to produce diverse documents.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to operate software packages	1.1 Set up workstation according to work health and safety standards and organisational requirements 1.2 Determine word-processing software task requirements 1.3 Determine spreadsheet software task requirements 1.4 Determine software application according to task requirements 1.5 Identify document purpose, audience and presentation requirements and clarify with required personnel
2. Use word-processing software	2.1 Identify document purpose, audience and presentation requirements and clarify with required personnel 2.2 Determine text-based business document style guide

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ELEMENT	PERFORMANCE CRITERIA
	requirements 2.3 Finalise documents using software and technical functions and formatting according to task requirements 2.4 Name, save and print to a Portable Document Format (PDF) according to task requirements
3. Use spreadsheet software	3.1 Identify document purpose, audience and presentation requirements and clarify with personnel as required 3.2 Enter formulas and functions and customise spreadsheet settings according to task requirements 3.3 Name, save and print to PDF document according to task requirements
4. Use third application software package	4.1 Select software application package according to task requirements 4.2 Determine purpose, audience and presentation requirements 4.3 Use technical functions, other data and formatting to finalise document 4.4 Name, save and print to PDF document according to task requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Numeracy	• Adds, subtracts, multiplies and divides whole numbers and decimals, identifying and selecting formulas and functions to use • Applies order of operations in calculations
Oral communication	• Clarifies work requirements using required language, questioning and active listening techniques
Reading	• Interprets textual information and determines organisational standards and job requirements • Identifies and applies symbols, icons and text associated with applications software
Writing	• Enters both written and verbally received information and data into a format applicable to software application • Selects vocabulary, syntax, terminology, labelling and naming conventions applicable to program
Planning and	• Plans routine tasks with goals and outcomes, taking some limited

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Skill	Description
organising	responsibility in decisions regarding sequencing
Self-management	• Follows routine procedures in using digital technology and enters, stores and retrieves information directly applicable to own role
Technology	• Identifies and evaluates purposes, specific functions and key features of basic digital systems and tools • Operates digital systems and tools in completing routine tasks and adapting some functions

Unit Mapping Information

Supersedes and is equivalent to ICTICT203 Operate application software packages.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT214 Operate application software packages

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- produce three workplace documents using three different software packages including word processing, spreadsheets and one additional software application package on at least one occasion.

In the course of the above, the candidate must:

- apply workplace health and safety (WHS) principles and responsibilities
- follow organisational requirements.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- organisational application software packages
- technical terminology applicable to reading help files and responding to system help prompts
- industry standard business practices applicable to preparing reports using
- features and functions of commercial computing packages and of the industry standard software
- functions and features of Portable Document Formats (PDFs)
- import and export software functions
- document linking functions
- WHS principles and responsibilities
- purpose of input and output devices.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- required hardware device
- industry standard software
- documents detailing organisational style guide and policy
- data required in developing software application documents.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT215 Operate digital media technology packages

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to identify, select and use a digital media package and supporting technologies to produce a variety of media rich documents.

It applies to individuals who work under supervision within a small to large office environment and have responsibility in completing designated tasks, using a range of practical skills and basic technical knowledge.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to operate a digital media package	1.1 Set up workstation according to work health and safety standards and organisational requirements 1.2 Identify requirements of design brief and user environment 1.3 Determine required digital media package 1.4 Determine required data set according to task requirements
2. Operate digital media package	2.1 Manipulate and adapt data according to task requirements 2.2 Incorporate graphics, moving images and sound according to task requirements 2.3 Name and save document in file and folder
3. Review digital media	3.1 Test digital media presentation incorporated graphics,

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ELEMENT	PERFORMANCE CRITERIA
design	moving images and sound 3.2 Present digital media package to required personnel 3.3 Seek and respond to digital media package presentation feedback from required personnel 3.4 Review final product against design brief and obtain final sign off from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Numeracy	• Adds and subtracts whole numbers, fractions and decimals in calculating time, audio output, graphic dimensions and file size
Oral communication	• Uses plain English, listening and questioning techniques • Presents information to audience using tone, grammar and syntax
Reading	• Interprets textual and diagrammatic information • Interprets systems related icons, text and diagrams
Writing	• Enters written and verbally received information and data into a format required by digital media package • Selects vocabulary, syntax, terminology, labelling and naming conventions in program and design requirements
Planning and organising	• Plans routine tasks with goals and outcomes, taking some limited responsibility in decisions regarding sequencing
Self-management	• Takes personal responsibility in adhering to legal and regulatory requirements • Follows routine procedures in using digital technology and enters, stores and retrieves information directly applicable to own role
Technology	• Identifies and evaluates purposes, specific functions and key features of basic digital systems and tools • Operates basic digital systems and tools in completing routine tasks and adapting some functions

Unit Mapping Information

Supersedes and is equivalent to ICTICT204 Operate a digital media technology package.

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Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT215 Operate digital media technology packages

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify and define data set, incorporate data set into media technology package and present output on one occasion.

In the course of the above, the candidate must:

- interpret basic requirements of a design brief
- meet organisational requirements using digital media package
- apply workplace health and safety (WHS) principles and responsibilities
- use help manuals and online support.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- basic principles of visual design
- functions and features of digital media packages and technologies
- graphic design and stylistic language conventions
- WHS principles and responsibilities
- principles of digital imaging and file formats, video and sound file formats, file management and transfer systems
- vendor product directions in digital media hardware and software
- creative information, scripts (text) and images
- basic principles of legal and regulatory requirements that apply to operating digital media technology packages.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

- This includes access to:
- required industry standard hardware and software
- documents detailing organisational style guide and policy
- data required in developing software application documents.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT216 Design and create basic organisational documents

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.
Release 2	Correcting an error in Performance Criteria 2.1.

Application

This unit describes the skills and knowledge required to design, create and produce basic organisational documents using application software according to organisational guidelines and procedures.

It applies to those who use foundation information and communications technology (ICT) skills to produce documents in a wide range of varying industry occupations.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to develop organisational documents	1.1 Establish and confirm document requirements according to business need 1.2 Determine applicable organisational document and style guidelines and procedures 1.3 Research and select application software according to organisational procedures
2. Develop organisational	2.1 Design and configure document template using application software according to task specifications

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documents	2.2 Create organisational document using a range of features from application software 2.3 Edit and amend document design according to business need 2.4 Finalise, save and back up document according to organisational procedures
3. Evaluate organisational documents and incorporate feedback	3.1 Review document and obtain feedback from required personnel 3.2 Incorporate feedback and update document according to business need 3.3 Save and close working documents and tools according to organisational procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	**DESCRIPTION**
Numeracy	• Takes measurements and performs calculations for document layout
Oral communication	• Clarifies work requirements and obtains feedback using required language, questioning and active listening techniques
Reading	• Identifies and interprets text in determining organisational guidelines and requirements and application software specifications
Writing	• Uses required language and organisational procedures when designing required workplace documents
Planning and organising	• Plans routine tasks with goals and outcomes, taking some limited responsibility in decisions regarding sequencing
Technology	• Follows routine procedures in using digital technology and enters, stores and retrieves information directly applicable to own role • Interprets purposes, specific functions and key features of basic digital systems and tools and operates them in completing routine tasks and adapting functions • Completes work tasks and accesses information using the main features and functions of digital tools

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Unit Mapping Information

Supersedes and is equivalent to ICTICT205 Design basic organisational documents using computing packages.

Links

Companion Volume Implementation Guide is found on VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT216 Design and create basic organisational documents

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.
Release 2	Correcting an error in Performance Criteria 2.1.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop and produce at least two required organisational documents, with minimal design instruction.

In the course of the above, the candidate must:

- edit documents according to at least two different feedback suggestions
- save documents and back up in a different location
- comply with style guidelines and organisational procedures.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- application software tools and features
- organisational style guidelines and procedures
- organisational storage and retrieval procedures.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- organisational guidelines
- required hardware devices, application software and its features.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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ICTICT219 Interact and resolve queries with ICT clients

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to provide routine Information and Communications Technology (ICT) support to clients in a professional manner.

It applies to individuals who, while working under a level of supervision, have responsibility in frontline technical support. It applies to those who exercise discretion and judgement to provide assistance to clients in an ICT environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to interact with clients	1.1 Determine ICT clients and communication methods according to organisational requirements 1.2 Establish and confirm nature of client's ICT query 1.3 Lodge client query according to organisational requirements 1.4 Determine query and complaint management process 1.5 Determine remediation options according to organisational requirements
2. Respond to client queries	2.1 Determine required remediation actions according to task requirements 2.2 Refer and escalate client query to required personnel

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ELEMENT	PERFORMANCE CRITERIA
	2.3 Plan resolution process according to task requirements 2.4 Seek and respond to resolution process plan feedback from required personnel
3. Finalise client query process	3.1 Document and record resolution process according to organisational requirements 3.2 Communicate client query resolution with client according to task requirements 3.3 Respond and rectify client feedback 3.4 Seek final sign-off from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Oral communication	• Uses active listening and questioning techniques to elicit information and clarify client queries, concerns and complaints
Reading	• Evaluates textual information containing ICT specific terminology to establish proactive training needs
Writing	• Prepare documentation outlining client query and resolution process according to organisational requirements using required grammar and language and applicable ICT terminology
Planning and organising	• Plans a range of routine and some non-routine tasks, accepting stated goals and aiming to achieve them on time
Problem solving	• Recognises and responds to predictable routine problems
Self-management	• Follows explicit protocols immediately related to own role
Technology	• Uses main features and functions of basic digital tools

Unit Mapping Information

Supersedes and is equivalent to ICTICT209 Interact with ICT clients.

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Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT219 Interact and resolve queries with ICT clients

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify, record and document at least one client query
- remediate and communicate at least one solution to a client.

In the course of the above, the candidate must:

- comply with organisational requirements
- follow escalation procedures.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard hardware and software products and their general features and capabilities
- ICT client business domain and business critical functions
- organisational systems and working environment that may assist in interacting and resolving queries with ICT clients
- organisational policies that may assist in interacting and resolving queries with ICT clients.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- required hardware devices, software and documentation

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- organisational guidelines.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTICT221 Identify and use specific industry standard technologies

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to engage in a basic ongoing review and research of industry specific technologies in order to identify and apply these technologies and techniques to improve aspects of an organisation's activities.

It applies to individuals who work under supervision and are involved in ensuring that the quality of business processes are maintained at a high level through application of industry specific technologies.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to use industry specific technologies	1.1 Identify organisational technology upgrades and advancement requirements 1.2 Identify technologies required to meet organisational requirements 1.3 Classify industry specific technologies according to organisational requirements
2. Implement industry specific technologies	2.1 Implement and test industry specific technologies according to task requirements 2.2 Use features and functions of industry specific technologies

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ELEMENT	PERFORMANCE CRITERIA
	according to task requirements 2.3 Access and use sources of information according to task requirements
3. Evaluate performance of basic industry specific technology	3.1 Evaluate performance, usability and benefit to organisation of implemented technologies 3.2 Determine and document environmental considerations of implemented technologies 3.3 Seek and respond to user according to organisational requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Investigates, evaluates and applies information from a range of technical texts to expand own knowledge and identify industry specific technologies
Oral communication	• Uses listening and questioning techniques to obtain information and feedback and identify and evaluate industry specific technologies
Reading	• Interprets technical online and hard copy documentation containing complex terminology and diagrams • Interprets technical information to identify industry specific technologies and determines environmental considerations
Self-management	• Organises own workload aligned to organisational expectations and follows explicit protocols and procedures • Identifies priorities and sequences involved in defined tasks and assembles required resources
Technology	• Identifies purposes, specific functions and key features of basic digital systems and tools and operates them

Unit Mapping Information

Supersedes and is equivalent to ICTICT211 Identify and use basic current industry specific technologies.

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Links

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Assessment Requirements for ICTICT221 Identify and use specific industry standard technologies

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify, implement and evaluate at least three industry standard technologies
- use at least one feature and at least one function of each industry standard technology above.

In the course of the above, the candidate must:

- comply with task and organisational requirements.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard technology trends and directions in Information and Communications Technology (ICT), and major industry technology standards used in specified area
- vendor product directions
- industry standard hardware and software products and their general features and capabilities
- information gathering methodologies.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- required industry standard technologies, features and functions that may assist in identifying and using specific industry standard technologies
- required hardware, software and its components.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTICT222 Research and share ICT solutions for Indigenous users

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to research, identify and collaboratively discuss ICT solutions that meet the specific needs of Indigenous users.

It applies to Indigenous and non-Indigenous individuals who work with Indigenous individuals and communities and use a range of knowledge of Indigenous learning styles and cultural systems to provide advice on ICT solutions. ICT solutions refers to hardware and electronic resources including software applications, Wi-Fi, connected networks and online websites.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: delivery and assessment against this unit of competency must comply with Indigenous community protocols and guidelines and be supported by Elders and custodians of Country. The unit recognises that there is no single Australian Indigenous culture and emphasises the importance of culturally appropriate behaviour and local community consultation.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify uses of ICT systems and resources for Indigenous users	1.1 Identify Indigenous user requirements 1.2 Confirm industry standard communication technologies, software applications and hardware solutions used with required Indigenous users and community stakeholders

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ELEMENT	PERFORMANCE CRITERIA
2. Identify and review uses of specific ICT resources required for Indigenous users	2.1 Identify a range of methods of accessing electronic resources for an Indigenous user 2.2 Identify alternative electronic resources, software and hardware solutions 2.3 Review and confirm a range of electronic resources and solutions
3. Share ICT solutions that meets needs of Indigenous users	3.1 Discuss required ICT solutions with Indigenous user according to task requirements 3.2 Communicate and demonstrate function and use of an ICT solution to Indigenous user 3.3 Communicate purpose and intent of ICT solutions in Indigenous contexts 3.4 Seek and respond to feedback from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Identifies culturally specific information and applies information to benefit Indigenous users
Oral communication	• Uses active listening and questioning techniques to clarity and present information using culturally appropriate communication skills and language
Reading	• Identifies and interprets hard copy and on-line texts from Indigenous and non-Indigenous sources
Planning and organising	• Identifies and assembles resources required in undertaking tasks
Technology	• Interprets purposes, specific functions and key features of basic digital systems and tools and operates them in completing routine tasks

Unit Mapping Information

Supersedes and is equivalent to ICTICT212 Incorporate Indigenous needs and perspectives into ICT environment.

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Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT222 Research and share ICT solutions for Indigenous users

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- assess and demonstrate use of at least three different communication technologies, software applications and hardware solutions
- Identify information for at least one Australian Indigenous user and their community, in a culturally appropriate way.

In the course of the above, the candidate must:

- identify specific Indigenous customs and practices impacting use of an ICT solution
- consult with Indigenous community members including local community organisations, including Indigenous personnel, community organisations, agencies and other required bodies
- identify Indigenous laws, family relationships and languages.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- functions, features and uses of required hardware, software products, applications and websites
- customs and practices of Indigenous users and communities Indigenous cultural communications attributes.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

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- required hardware device and software applications
- the internet, including connectivity, internet browser and website access.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT309 Create ICT user documentation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to create clear and coherent user documentation that is easy to navigate and apply.

It applies to individuals who work under supervision with responsibilities for the development of Information and Communications Technology (ICT) user documentation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to produce user documentation	1.1 Discuss and determine user documentation requirements with required personnel 1.2 Investigate and determine industry standard user documentation requirements applicable to task 1.3 Identify the required ICT system, software, hardware and application or network to be documented with required personnel 1.4 Design and develop user documentation template using required software, according to applicable industry standards 1.5 Submit user documentation requirements and template to required personnel, according to organisational procedures 1.6 Obtain approval from required personnel and action required

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ELEMENT	PERFORMANCE CRITERIA
	changes according to feedback
2. Produce user documentation	2.1 Conduct a review of the required ICT system, hardware, software program and network 2.2 Document characteristics and functions of applicable components in ICT system, according to user documentation requirements 2.3 Access and examine applicable technical, design, user specification and supporting documentation 2.4 Design draft user documentation and obtain internal feedback from required personnel 2.5 Create user documentation according to template and operation of applicable components in ICT system
3. Review user documentation and obtain sign-off	3.1 Submit user documentation to target audience and seek feedback 3.2 Gather and respond to feedback 3.3 Implement user documentation changes and improvements 3.4 Submit user documentation to required personnel and obtain approval and sign-off
4. Finalise user documentation creation procedures	4.1 Confirm all documentation and approval procedures have been performed 4.2 Review and assess impact of implementing user documentation 4.3 Evaluate and report on user documentation creation procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Identifies and interprets textual, numeric and diagrammatic information with ICT specific syntax, terminology and formatting in determining job requirements
Writing	• Develops user and supporting documentation using appropriate structure, layout and technical programming language in required format
Oral Communication	• Uses listening and questioning techniques to obtain and confirm information, feedback and requirements

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Initiative and Enterprise	• Takes some personal responsibility and adheres to legal and regulatory requirements
Self-management	• Plans routine tasks with familiar goals and outcomes, taking some limited responsibility in decisions regarding sequencing and timing
Technology	• Identifies purpose, specific functions and key features of industry standard digital systems and tools and operates them in completing routine tasks

Unit Mapping Information

Supersedes and is equivalent to ICTICT301 Create user documentation.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT309 Create ICT user documentation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- create a user document for an ICT system or product, including software, hardware, application or network.

In the course of the above, the candidate must:

- access and examine existing technical, design, user specification and supporting documentation
- gather and respond to feedback.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- user documentation features and requirements
- industry standard documentation requirements
- user documentation design and usability
- intent of web-based user documentation
- user documentation templates and style guides
- features of technical user documentation.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- required ICT system, hardware, software program and networks

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- user documentation standards
- required software tools.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT310 Identify and use industry specific technologies

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to identify, research and apply industry specific technologies, and assist in enhancing and maintaining an end-to-end business process at its highest quality possible.

It applies to individuals who work under minimal supervision and support information technology activities in the workplace across a wide range of Information and Communications Technology (ICT) areas, including technical support, network administration, web technologies, software applications and digital media technologies.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to use technologies	1.1 Identify and evaluate industry specific technologies, according to organisational procedures 1.2 Determine required industry specific technologies according to task requirements 1.3 Develop implementation plan for industry specific technology, detailing process and expected outcomes according to required specifications
2. Implement and test technologies	2.1 Test industry specific technologies according to plan and task requirements

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Implement industry specific technology according to task requirements 2.3 Use features and functions of industry specific technology according to task requirements
3. Evaluate industry specific technology performance	3.1 Evaluate and document performance, usability and benefit of industry standard specific technologies according to organisational procedures 3.2 Seek and respond to performance and usability feedback from required personnel, according to organisational procedures 3.3 Lodge document according to organisational procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Investigates, evaluates and applies information from a range of complex and technical texts and expands own knowledge
Oral communication	• Requests information and feedback using listening and questioning techniques and identifies and evaluates industry specific technologies
Reading	• Identifies and interprets technical online and hard copy documentation containing complex terminology and diagrams • Identifies industry specific technologies that will benefit organisation and determines environmental impacts
Planning and organising	• Takes responsibility for planning and organising own workload, identifying ways of sequencing and combining elements • Initiates standard procedures when responding to familiar problems within immediate context
Self-management	• Takes personal responsibility in adhering to legal and regulatory responsibilities applicable to own work context
Technology	• Identifies and applies general design and operating principles of digital tools

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Unit Mapping Information

Supersedes and is equivalent to ICTICT305 Identify and use current industry specific technologies.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT310 Identify and use industry specific technologies

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify and determine compatibility of at least three industry specific technologies in one organisational area
- use and test features and functions of identified industry specific technologies to industry standards in one organisational area.

In the course of the above, the candidate must:

- adhere to legislative and organisational standards and requirements applicable to industry specific technologies
- evaluate capabilities of identified industry specific technologies
- assist in adapting implementation of identified industry specific technologies to organisational environment.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard technology trends in Information and Communications Technology (ICT)
- industry technology standards used in specified ICT area
- vendor product instructions applicable to specified ICT area
- general features, capabilities and application of industry standard hardware and software products
- information gathering techniques applicable to identifying industry specific technologies
- legislative and organisational procedures, standards and requirements applicable to using industry specific technologies.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- industry standard specific technologies used in industry
- documents detailing work health and safety (WHS) standards, environmental guidelines and organisational procedures.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT311 Customise packaged software applications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to analyse, design, implement and review the customisation of packaged software applications delivered to clients, using features and plugins of the packaged software applications.

It applies to those who work under minimal supervision as Information and Communications Technology (ICT) users and support personnel for software application activities in the workplace. Clients, in this instance, refers to internal as well as external teams and projects.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Confirm client requirements	1.1 Discuss and determine client requirements according to organisational procedures 1.2 Confirm and document client and technical specifications with required personnel, according to organisational procedures 1.3 Determine level of user and technical documentation needed to meet client requirements
2. Develop and apply customisation to packaged software	2.1 Design packaged software application according to client requirements given system limitations 2.2 Customise software applications using simple programming

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ELEMENT	PERFORMANCE CRITERIA
applications	constructs 2.3 Obtain feedback from required personnel and amend accordingly 2.4 Apply and implement customised packaged software applications 2.5 Document changes according to organisational procedures
3. Provide support for customised applications	3.1 Review work and finalise documentation according to organisational procedures 3.2 Produce documentation and user guides and submit to required personnel 3.3 Obtain client evaluation and feedback on supporting documentation 3.4 Evaluate work with required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Identifies and interprets various sources of technical information
Oral communication	• Elicits and evaluates information using listening and questioning techniques • Identifies and confirms requirements, liaises with clients and obtains feedback using simple and required language
Reading	• Identifies and interprets text and determines organisational and security requirements
Writing	• Develops documentation detailing customised software application designed using appropriate structure, layout and technical programming language according to organisational procedures
Planning and organising	• Takes responsibility in planning and organising own workload and identifies ways of sequencing and combining elements
Self-management	• Takes responsibility in outcomes of routine decisions applicable to own role
Technology	• Identifies purposes, specific functions and key features of industry standard digital systems and tools • Tests and operates industry standard digital tools and systems and

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SKILL	DESCRIPTION
	completes routine tasks

Unit Mapping Information

Supersedes and is equivalent to ICTICT307 Customise packaged software applications for clients.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT311 Customise packaged software applications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- customise at least two package software applications according to two different client briefs.

In the course of the above, the candidate must:

- interpret and document client requirements to customise software applications
- design, analyse, implement and review at least one packaged software applications
- produce documentation of customised software application designed above
- obtain feedback and confirm requirements have been met.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- general features and capabilities of industry standard hardware and software products
- basic functions and features of software applications applicable to client
- Information and Communications Technology (ICT) structure and system infrastructure
- organisational policy and procedures applicable to customising software
- organisational security procedures and requirements.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- industry standard customisable software applications

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- client requirements documentation
- organisational and security requirements
- required hardware, software and its components.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT312 Use advanced features of applications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to use computer applications employing advanced features in the preparation and presentation of data. It involves manipulating data and accessing support resources to solve routine problems.

It applies to individuals who work under minimal supervision and support information technology activities in software applications.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to use advanced features	1.1 Establish required computer application and task requirements 1.2 Identify advanced features required and confirm with required personnel 1.3 Access vendor documentation for computer applications
2. Manipulate data using advanced features	2.1 Transfer data between applications, linking and embedding required data files 2.2 Create and employ objects and templates in routine activities 2.3 Use keyboard shortcuts and features in computer applications
3. Confirm application	3.1 Review and establish whether use of advanced features are

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features are used to full capability	applicable according to task requirements 3.2 Seek feedback on use of application according to task requirements
4. Access and use support resources	4.1 Solve task problems using support resources including online help, manuals and training booklets 4.4 Access and apply technical support in addressing system problems, using troubleshooting results and alert messages

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	**Description**
Oral communication	• Uses listening and questioning techniques to confirm information and discussed identified problems
Reading	• Identifies and interprets a variety of hard copy, online and software generated technical information • Interprets software specific language, syntax and code and applies features and functions of applications when solving problems
Self-management	• Interprets key principles and concepts underpinning the design and operation of digital systems and tools and applies these when troubleshooting existing technology
Problem-solving	• Uses problem-solving techniques to overcome routine problems

Unit Mapping Information

Supersedes and is equivalent to ICTICT308 Use advanced features of computer applications.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT312 Use advanced features of applications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- use at least three different computer applications employing advanced features and import and export capacities
- solve at least three routine problems using support resources.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- advanced features and functions of applicable industry standard application software, keyboard shortcuts and features
- vendor applications, directions and their features
- methods of data transferral between applications
- organisational procedures applicable to using advanced features of applications
- available support resources for technical support and troubleshooting.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- industry standard applications with advanced features and their functions
- documents and information containing data required in demonstrating advanced features of applications
- support resources, including online, manuals and training booklets.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTICT313 Identify IP, ethics and privacy policies in ICT environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to assist with the protection and lawful use of intellectual property (IP) and observing relevant organisational ethics and privacy policies.

It applies to individuals who are required to use intellectual property held by other people or organisations, to assist with the maintenance of organisational ethics and privacy policies and procedures.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify principles underpinning organisational IP, ethics and privacy policy procedures	1.1 Locate and access the organisations IP, ethics and privacy policy and procedures 1.2 Identify own role in observing and adhering to organisation's IP, ethics and privacy policy and procedures to avoid IP and privacy infringement 1.3 Determine the purpose and intention of organisation's IP, ethics and privacy policy and procedures 1.4 Identify and understand different ethical theories

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ELEMENT	PERFORMANCE CRITERIA
	and approaches
2. Understand and apply principles underpinning organisational IP, ethics and privacy policy procedures	2.1 Identify the purpose in developing and implementing organisational IP, ethics and privacy policy procedures to prevent IP infringement 2.2 Determine the principles applied in the organisational IP, ethics and privacy policy procedures
3. Assist with non-compliance incident identification and recommendations	3.1 Identify organisational risk assessment and identification process 3.2 Assist with identifying and observing internal and external non-compliance infringements of the organisations IP, ethics and privacy policy procedures 3.3 Identify principles that could assist with overcoming non-compliance incidents with relevant personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Oral communication	• Provides information using language and terminology required for audience • Obtains information from others by listening and questioning
Reading	• Interprets and comprehends organisational texts required for IP requirements

Unit Mapping Information

New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT313 Identify IP, ethics and privacy policies in ICT environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify at least three different types of intellectual property (IP) within the organisation
- identify and support the maintenance and improvement of organisational IP, ethics and privacy policy procedures on at least two occasions

In the course of the above, the candidate must:

- identify organisation risk assessment and identification process
- identify principles underpinning the maintenance and improvement of organisational IP, ethics and privacy policy procedures
- assist with identifying the non-compliance incidents and risks within an organisation.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- key legislation related to the use of IP in the ICT industry
- key policies, procedures and documentation in the ICT industry, including those related to:
  - organisational IP policies and procedures
  - codes of ethics pertinent to the ICT industry
  - copyright
  - privacy
- key organisational communication processes and procedures related to identifying IP, ethics and privacy policies in ICT environments.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- required organisational policies, codes of practice, legislation and standards documentation
- workplace documentation and resources
- IP case studies and, where possible, real situations.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT425 Implement WHS, environmental sustainability and anti-discrimination practices in an ICT workplace

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Application

This unit describes the skills and knowledge required to, through communication and teamwork, implement workplace health and safety (WHS), environmental sustainability (ES), equal employment opportunity (EEO) and anti-discrimination practices in an ICT workplace within own responsibilities.

This unit applies to individuals who are required to work and participate in an ICT workplace with some supervision.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Gather and use information on ICT workplace compliance instruments and reputable resources	1.1 Identify legislative instruments and review reputable resources, and organisational priorities relevant to workplace health and safety (WHS), environmental sustainability (ES), equal employment opportunity (EEO) and anti-discrimination practices in ICT workplaces to determine requirements for compliance within scope of own responsibilities

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	1.2 Collect and analyse information on organisational processes and procedures relating to WHS, ES, EEO and anti-discrimination practice in an ICT workplace to develop and document an initial view of compliance gaps and opportunities
2. Participate in consultation	2.1 Consult with those involved in ICT workplace activities to collect information about the requirements and nature of WHS, ES, EEO and anti-discrimination practice in an ICT workplace, including risks and issues 2.2 Work collaboratively to identify and document compliance gaps and opportunities 2.3 Consult with those involved in ICT workplace activities to validate gaps and opportunities and finalise compliant practices for implementation
3. Improve ICT WHS and environmental sustainability compliance	3.1 Participate in the use of strategies and tools to embed compliant practices in ICT workplace activities 3.2 Monitor ICT workplace activities to measure the success of practices implemented for WHS, ES, EEO and anti-discrimination compliance in an ICT workplace 3.3 Consult with those involved in ICT workplace activities to respond to resistance and remaining risks and issues 3.4 Agree and document amendments to practices to address remaining resistance, risks and issues

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	**Description**
Learning	• Identifies, plans and implements strategies to manage gaps in personal knowledge • Identifies reputable sources of information from which to gather resources and information
Reading	• Analyses and consolidates information and data from a range of sources, against defined criteria and requirements, and checks for accuracy and completeness
Writing	• Prepares a range of textual information appropriate for audience for informal and formal purposes
Oral	• Participates in verbal exchanges of information using language, tone

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Communication	and pace appropriate to audience and environment • Uses listening and questioning techniques to elicit the views and opinions of others and to confirm understanding
Navigate the world of work	• Accepts responsibility and ownership for the task and makes decisions on completion parameters and the need for coordination with others • Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements
Interact with others	• Selects and uses appropriate conventions and protocols when communicating with clients and colleagues in a range of work contexts • Recognises and accommodates basic differences and priorities of others • Cooperates with others and contributes to work practices where joint outcomes are expected and deadlines are to be met
Get the work done	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes • Makes routine decisions and implements standard procedures for routine tasks, using formal decision-making and problem-solving processes for more complex and non-routine situations • Uses the main features and functions of digital tools to complete work tasks and access information

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTICT425 Implement WHS, environmental sustainability and anti-discrimination practices in an ICT workplace	N/A	New unit	No equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT425 Implement WHS, environmental sustainability and anti-discrimination practices in an ICT workplace

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements and performance criteria of this unit; including evidence of the ability to:

- Implement on four occasions WHS, ES, EEO and anti-discrimination practices in own area of work, including the ability to:
  - identify, interpret and apply legislative instruments and reputable resources to organisational priorities to ensure compliance
  - undertake a risk assessment and implement a risk control utilising an evaluation procedure within own area of work
  - document responsibilities of employers, employees, contractors and agents
  - analyse existing organisational procedures, including consulting with three individuals involved with ICT workplace activities, and determining if procedures are sufficient for compliance; including:
    - individual workstation set up of desk, chair, peripherals, computer
    - technology start up and shut down
    - new technology installation
    - technology maintenance and testing
    - use of personal protective equipment (PPE)
  - respond to the resistance of an individual involved in ICT workplace activities to implement and embed compliant practices
  -

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

- Legislative instruments and reputable resources relating to WHS, ES, EEO and anti-discrimination

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- Typical organisational priorities, policies and procedures relating to WHS, ES, EEO and anti-discrimination
- Risks and issues related to WHS, ES, EEO and anti-discrimination compliance in the ICT workplace
- Options, tools, and strategies to address WHS, ES, EEO and anti-discrimination compliance gaps, risks and issues, including risk assessment approaches, risk controls and evaluation procedures
- Responsibilities of employers, employees, contractors and agents relating to WHS, ES, EEO and anti-discrimination procedures in the workplace
-

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in an ICT working environment or workplace. This includes access to:

- Organisational priorities relating to WHS, ES, EEO and anti-discrimination practices
- Organisational risk assessment and evaluation procedure
- Organisational risk control implementation procedure
- ICT workplace equipment including:
  - individual workstation consisting of desk, chair, peripherals, computer
  - individual users involved in ICT workplace activities to consult

Assessors of this unit must satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT427 Identify, evaluate and apply current industry-specific technologies to meet organisational needs

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Application

This unit describes the skills and knowledge required to identify, evaluate and implement industry-specific technologies to address organisational needs. It involves acquiring industry-specific technologies and obtaining user feedback.

It applies to individuals who support information and communications technology (ICT) activities in the workplace across a wide range of ICT areas, including technical support, network administration, programming, testing, web technologies, software applications and digital media technologies.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and select industry-specific technologies	1.1 Interpret organisational needs to design indicators against which industry technologies will be evaluated to determine suitability to the organisation including performance, useability and sustainability indicators 1.2 Research current industry-specific technologies to meet

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	organisational needs 1.3 Evaluate and compare industry-specific technologies against indicators to the potential benefits of industry-specific technologies to the organisation against indicators 1.4 Select industry-specific technologies to address organisational needs 1.5 Acquire industry-specific technologies on the basis of the evaluation and in accordance with organisational procurement procedure
2. Implement industry-specific technologies	2.1 Consult with user to plan and evaluate the implementation of the industry-specific-technologies 2.2 Implement industry-specific technologies to address organisational needs 2.3 Check and adjust implementation of the industry-specific technologies to meet organisational needs and organisational workplace health and safety (WHS) compliance requirements
3. Obtain user feedback and evaluate industry-specific technologies	3.1 Seek and document user feedback on industry-specific technologies 3.2 Evaluate industry-specific technologies against indicators 3.3 Adjust industry specific technologies in response to user feedback and evaluation

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	**Description**
Learning	• Investigates, evaluates and applies information from a range of complex and technical texts to expand own knowledge and identify industry-specific technologies that will benefit the organisation
Reading	• Identifies and interprets technical online and hard copy documentation containing complex terminology and diagrams to identify industry-specific technologies that will benefit the organisation
Oral Communication	• Elicits information and feedback by using effective listening and questioning techniques to identify and evaluate industry-specific technologies • Uses clear, easy-to-understand language and translates industry-specific terminology into plain English when talking to users

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Numeracy	• Uses numerical information to compare the value of products with regard to quantity, price and quality
Navigate the world of work	• Recognises and responds to both explicit and implicit protocols within familiar work contexts and appreciates the importance of identifying and responding to protocols in new situations • Recognises and addresses WHS compliance issues
Get the work done	• Uses key principles and concepts underpinning the design and operation of digital systems and tools, and applies these when evaluating and implementing new industry-specific technologies • Develops plans with an awareness of how they may contribute to meeting organisational needs

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTICT427 Identify, evaluate and apply current industry-specific technologies to meet organisational needs	ICTICT417 Identify, evaluate and apply current industry-specific technologies to meet industry standards	Edits to title, application and elements 1–3 to clarify intent and scope. Edits to assessment requirements to clarify intent.	Equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT427 Identify, evaluate and apply current industry-specific technologies to meet organisational needs

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in elements and performance criteria of this unit; including evidence of the ability to:

- Identify, evaluate, implement and review two current industry-specific technologies and evaluate the potential benefits of these technologies to the organisation
-

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

- Current industry-specific technologies, trends and directions
- Methods of research
- Methods of designing indicators
- Types of indicators
- Approaches to monitoring performance against indicators
- Methods of getting user feedback
- Organisational requirements and how industry-specific technologies can assist
- Sources of industry-specific technologies detailing general features, capabilities, and compliant application of current industry-specific hardware and software products to be evaluated
-

Assessment Conditions

Skills must be demonstrated in a workplace or simulated environment where conditions are typical of those in an ICT working environment or workplace. This includes but is not limited to:

- Information on organisational needs for industry-specific technology

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- A site where industry-specific technologies are used
- Current industry-specific technologies and accompanying documentation
- Organisational procurement procedure
- Information detailing workplace health and safety (WHS) compliance requirements
- Individual user to consult

Assessors of this unit must satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT429 Determine and confirm client business requirements

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to determine client business system requirements and verify the accuracy of information gathered.

It applies to Information and Communications Technology (ICT) personnel who are required to analyse client expectations and needs, as well as recommending business system changes. Clients can be internal and external and include a range of team members and staff.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine context of business needs and problems	1.1 Identify business problem to be investigated, including determining system boundaries, scope and development methodology to be used 1.2 Choose information gathering method and develop questions according to business problem 1.3 Develop objectives, prioritise activities and discuss expected outcomes to be achieved with required personnel 1.4 Document business problem, chosen information gathering method, objectives and expected outcomes according to organisational procedures 1.5 Submit documentation to required personnel

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ELEMENT	PERFORMANCE CRITERIA
2. Gather information	2.1 Use chosen information gathering methods and identify users of system and problems they encounter 2.2 Consult, record and confirm business system requirements with client according to organisational procedures 2.3 Analyse gathered information and establish problem specifications 2.5 Identify and document new system requirements and problems 2.4 Analyse physical requirements and identify changes required to implement new systems
3. Confirm system specifications	3.1 Check system requirements documentation and confirm it meets client business needs with required personnel 3.2 Submit documentation for client review and verification 3.3 Make changes to documentation as required and indicated by client 3.4 Submit documentation to client and required personnel for final approval and sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria

SKILL	DESCRIPTION
Reading	• Identifies, analyses and evaluates information from a variety of sources containing complex systems related terminology • Interprets a range of texts to determine system performance requirements and establish solutions
Writing	• Uses spelling and grammar, plain English and systems related text and terminology to develop information gathering tools and document recommendations
Oral Communication	• Uses listening and questioning techniques and systems related terminology to elicit information and liaise with clients
Planning and organising	• Takes responsibility for planning and organising own workload and identifies ways of sequencing and combining elements
Problem-solving	• Identifies and takes responsibility for addressing predictable and some less predictable problems in familiar work contexts
Technology	• Identifies the purposes, specific functions and key features of common digital systems and tools and provides advice on systems

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	and data gathering products

Unit Mapping Information

Supersedes and is equivalent to ICTICT401 Determine and confirm client business requirements.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT429 Determine and confirm client business requirements

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- obtain information and document a business system problem according to client requirements.

In the course of the above, the candidate must:

- produce a statement of business expectations, needs and critical business requirements
- perform analysis of system and physical requirements and identify new system requirements accordingly
- consult with required personnel and make applicable changes to documentation.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard data gathering and data capture techniques
- industry standard business systems and common client requirements
- client business processes
- physical requirements of client's business, including:
  - system functionality
  - geography
  - environment
  - client user
  - cost constraints
- procedures for documenting and confirming client business requirements.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a client expectations and requirements brief
- business objectives of client
- clients' business system
- systems, data gathering tools and required software products
- hardware and its components required for confirming client business requirements.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT430 Apply software development methodologies

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to apply traditional and non-traditional systems development methodologies.

It applies to individuals in senior development roles who exercise discretion and judgement to create solutions using technical knowledge and analysis skills.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine methodology	1.1 Determine and define subject activity 1.2 Define selection criteria for development methodology 1.3 Review and evaluate a range of traditional and non-traditional system development methodologies 1.4 Select system development methodology for required activity
2. Apply selected development methodology	2.1 Create initial project plan according to organisational standards 2.2 Identify applicable task types according to development methodology 2.3 Describe and articulate task types 2.4 Define applicable control structures to be created according

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ELEMENT	PERFORMANCE CRITERIA
	to task type execution requirements 2.5 Associate each task type with a set of input and output parameters
3. Adjust project according to methodology	3.1 Identify resources to support methodology selection 3.2 Solve tasks using selected methodology 3.3 Monitor project flow and record effectiveness against project plan 3.4 Review and document opportunities for improvement, lessons learned and recommendations for future projects 3.5 Submit results to required personnel for approval

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria

SKILL	DESCRIPTION
Reading	• Identifies, analyses and evaluates a range of textual information containing complex systems development specific terminology, syntax and diagrams
Writing	• Uses applicable spelling and grammar and technical terminology to document project plans, recommendations, processes and reports in required format
Planning and organising	• Applies formal processes when planning more complex tasks, producing plans with logically sequenced steps, reflecting an awareness of time and resource constraints and the needs of others
Self-management	• Analyses project methodologies and identifies some key principles that may be applicable in future situations
Technology	• Uses digital systems and tools to access, organise, analyse and display information applicable to the role

Unit Mapping Information

Supersedes and is equivalent to ICTICT403 Apply software development methodologies.

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Links

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Assessment Requirements for ICTICT430 Apply software development methodologies

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- select and apply a software development methodology for at least two different subject activities according to organisational standards.

In the course of the above, the candidate must:

- produce documentation as required by chosen methodology.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- key project management skills, techniques and requirements required in applying software development methodologies, including those related to:
  - input and output parameters
  - project plan creation processes
  - task types and applicable control structures
- client business domains and organisational requirements required in applying software development methodologies
- stakeholder roles and degree of stakeholder involvement in development process
- traditional and non-traditional system development methodologies
- key organisational standards and documentation techniques required in applying software development methodologies.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

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This includes access to:

- hardware, software and its components required to apply software development methodology
- design specifications
- industry standard system development methodologies
- organisational standards
- detailed user requirements document, including model and scope for given activity.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT431 Use online tools for learning

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to identify current and future skill and knowledge gaps and use the internet as a resource to acquire knowledge and skills to meet organisational requirements.

It applies to individuals who use the internet to develop new workplace skills.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify learning requirements	1.1 Identify current and future learning requirements and skill gaps according to organisational needs 1.2 Seek advice from required personnel on current and future learning requirements and skill gaps 1.3 Identify opportunities for learning development activities using online learning tools 1.4 Develop learning plan according to identified learning requirements and organisational training policies, plans and procedures
2. Research learning tools available online	2.1 Identify existing online learning tools applicable to learning plan objectives 2.2 Research and evaluate online learning tool in achieving

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ELEMENT	PERFORMANCE CRITERIA
	learning plan outcomes
3. Undertake online learning	3.1 Implement learning plan using identified online learning tools 3.2 Identify opportunities in the workplace to apply new learning 3.3 Follow coaching or mentoring advice in work activities
4. Monitor learning effectiveness	4.1 Determine mode for assessing effectiveness of online learning 4.2 Perform assessment and review outcomes 4.3 Undertake peer assessment and review feedback from peers 4.4 Identify further learning requirements from assessment review and feedback with required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Investigates and evaluates information from a range of sources to select online learning development activities to meet skills gaps and future learning needs
Reading	• Identifies, analyses and compares information gathered from a large range of both online and hard copy texts to inform current and future learning needs, and to develop and execute a learning plan
Writing	• Uses required language including referencing and web links to document findings, develop learning plan, undertake assessment and complete online learning
Oral Communication	• Elicits and evaluates information using listening and questioning techniques to identify skills gaps and future skills needs, and undertake online learning, assessment and feedback process
Teamwork	• Cooperates with others and contributes to work practices where joint learnings can be applied
Self-management	• Analyses assessment outcomes and identifies some key principles that may be applicable in future situations • Takes responsibility for defining key aspects of own workload and managing own learning related activities
Technology	• Identifies purposes, specific functions and key features of common digital systems and tools, and complete routine tasks

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Unit Mapping Information

Supersedes and is equivalent to ICTICT404 Use online learning tools.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT431 Use online tools for learning

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop and implement an online learning plan using at least two different online learning tools.

In the course of the above, the candidate must:

- acquire knowledge and skills using online learning tools
- use a range of learning mediums, including coaching, mentoring and peer-to-peer interactions
- confirm learning is reinforced by application.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- learning development activities using a range of online training tools
- organisational training policies, plans and procedures applicable to organisational learning requirements and online learning
- principles and techniques of measuring performance, including self-assessment
- methods to identify and prioritise required learning needs
- processes in developing learning plans
- systems and processes used to direct learning
- required competency standards and assessment relevant to learning.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

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This includes access to:

- online learning tools
- hardware and its components required to use online tools.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT432 Develop detailed technical design

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to assist in the development of a detailed technical design.

It applies to individuals performing systems design tasks as part of a team who are required to review and update technical design documents according to client requirements.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Assist in selecting technical design features	1.1 Establish business environment and client requirements 1.2 Select and revise design model based on iteration and design changes 1.3 Incorporate outstanding design points according to client requirements 1.4 Distribute reports identifying changes and implications to required personnel for review
2. Review designs	2.1 Compare design against technical requirements and amend as required 2.2 Confirm design with required personnel 2.3 Gather information and client feedback on design changes

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ELEMENT	PERFORMANCE CRITERIA
	and respond accordingly 2.4 Incorporate required design changes
3. Contribute to development of program specifications	3.1 Implement modules using incremental development techniques 3.2 Identify user authority for each module 3.3 Prepare detailed specifications of module implementation for each module 3.4 Prepare documentation according to project requirements and organisational procedures and guidelines

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Identifies, analyses and evaluates a range of online and hard copy text containing complex systems design terminology, syntax and diagrams, and applies information to task
Writing	• Uses spelling and grammar, plain English, systems design related terminology and diagrams to obtain feedback, document recommendations and prepare final project specifications
Oral Communication	• Uses listening and questioning techniques and, where applicable, project related terminology to liaise with clients, present information and obtain feedback
Teamwork	• Selects and uses required conventions and protocols when communicating with clients and co-workers in a range of work contexts • Uses strategies to establish a sense of connection and build rapport with clients and co workers
Planning and organising	• Applies formal processes when developing strategic initiatives, and plans tasks with logically sequenced steps
Problem-solving	• Initiates standard procedures when responding to familiar problems within immediate context
Technology	• Uses digital systems and tools to incorporate required changes to model • Uses digital technologies and systems to access information, search and enter data and code, present information and communicate with others, cognisant of data security and safety

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Unit Mapping Information

Supersedes and is equivalent to ICTICT405 Develop detailed technical design.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT432 Develop detailed technical design

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- assist in developing a detailed technical design according to client requirements.

In the course of the above, the candidate must:

- define client business environment and client's critical business functions and processes
- design and prepare a best-fit technical design for a set project, incorporating:
  - changes to design model based on user requirements
  - detailed specification of modules and user authority for each module
- produce updated documentation reflecting changes made to required personnel.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- technical design project life cycle
- key principles and techniques required to develop detailed technical design, including:
  - incremental development
  - module implementation
  - documentation
  - design fundamentals and refinement
  - design quality metrics
- different client business environments and critical functions and process
- industry standard design models applicable to developing detailed technical designs
- organisational procedures and guidelines applicable to developing detailed technical designs.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- business and client requirements
- project deliverables
- required hardware and digital devices
- required software, tools and licenses
- feedback mechanisms
- industry standard ICT blueprint.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT433 Build graphical user interfaces

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to design, build and test a graphical user interface (GUI) to specification.

It applies to individuals employed as programmers and user interface designers in a variety of fields and provide Information and Communications Technology (ICT) support in small to medium enterprises (SMEs).

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine specification of GUI and develop GUI prototype	1.1 Establish GUI requirements according to organisational requirements 1.2 Identify organisational standards applicable to GUI 1.3 Determine front and back-end for interfacing with GUI 1.4 Define required functionality of GUI 1.5 Determine application development language for writing GUI 1.6 Build prototype using tools available in determined language 1.7 Determine type and level of documentation required

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ELEMENT	PERFORMANCE CRITERIA
2. Design and build GUI according to specification	2.1 Design GUI components and incorporate required functionality 2.2 Define GUI actions and itemise UI events 2.3 Document design outcomes according to specification and organisational procedures 2.4 Build GUI using toolkit's classes or widgets, containers and other pertinent features according to specification
3. Test and document GUI according to specification	3.1 Test GUI and confirm overall functionality according to requirements 3.2 Iterate GUI design and build until test results meet requirements 3.3 Document GUI user requirements according to specification and organisational procedures 3.4 Produce GUI technical documentation according to specification and organisational procedures 3.5 Obtain client sign-off according to organisational procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	• Identifies and interprets a range of online and hard copy text containing complex ICT and programming specific terminology • Interprets and comprehends a large range of syntax, diagrams, icons, symbols, text, numbers and letters required to develop a GUI
Writing	• Uses spelling and grammar, plain English and specific terminology to produce documents to organisational guidelines as required by the job role • Develops GUI using programming syntax and conventions to develop GUI • Uses plain English, labels and terminology on the actual interface display
Self-management	• Identifies and follows explicit protocols and meets expectations applicable to own role

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	• Develops plans to manage relatively complex tasks with an awareness of how they may contribute to longer term operational and strategic goals • Takes responsibility for the outcomes of routine decisions related directly to own role
Problem-solving	• Identifies and anticipates an increasing range of familiar problems, their symptoms and causes, and implements contingency plans
Technology	• Identifies purpose, needs and limitations when selecting devices and applications for different tasks

Unit Mapping Information

Supersedes and is equivalent to ICTICT406 Build a graphical user interface.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT433 Build graphical user interfaces

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design and build a fully functional graphical user interface (GUI) according to specifications and organisational standards.

In the course of the above, the candidate must:

- demonstrate a GUI in concept and compiled form
- use applicable development tools in GUI construction
- confirm functionality of GUI on at least two different browsers and at least two different devices.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- object oriented programming concepts applicable to building graphical user interfaces
- system properties applicable to building a graphical user interface
- application development languages and prototyping tools and features included
- application programming interface (API) features
- open-source development tools
- organisational standards and codes of practice applicable to GUI building
- key testing procedures and documentation techniques required when building graphical user interfaces
- issues relating to copyright and intellectual property, privacy and data access legislation.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- GUI requirements documentation
- online tools available for prototyping and GUI design
- applicable organisational standards
- an integrated development environment (IDE) for determined language
- required hardware and its components
- required software, tools and licenses
- browsers and devices.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT434 Maintain website information standards

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to publish new content and establish and maintain accuracy and usability of industry standard content on client websites.

It applies to individuals working in web development and who provide support to small to medium enterprises (SMEs).

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare and publish organisational content and information	1.1 Identify organisational content and information publishing requirements according to organisational requirements 1.2 Plan publishing process including privacy, security and liability statements according to organisational requirements 1.3 Seek plan approval from required personnel 1.4 Publish organisational content and information according to plan
2. Provide navigation links and payment information	2.1 Determine and provide applicable users with access to required information and navigation links 2.2 Determine and list required payment options on

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ELEMENT	PERFORMANCE CRITERIA
	website according to organisational requirements
3. Present and test disclosure of policies and services	3.1 Present website statement outlining charges according to organisational requirements 3.2 Present warranty information on required screen according to organisational requirements 3.3 Provide after-sales support to required users according to organisational requirements 3.4 Test website cancellations, returns and refunds policy listing and accessibility, and amend as required 3.5 Implement and test product and service notifications
4. Provide customer service support systems	4.1 Determine and implement customer service standards guidelines on website according to organisational requirements 4.2 Test website users have accessible website feedback facility method according to organisational requirements 4.3 Test complaints facility receives, records and response 4.4 Document and finalise process according to organisational requirements

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Reading	• Reviews a range of documentation of varying quality to identify information relating to the organisation, organisational responsibilities and legislative requirements
Writing	• Uses spelling and grammar, plain English, a consistent writing style and industry specific terminology to produce web content to organisational guidelines and to web development standards • Uploads content onto the web and modifies existing web content using required syntax and conventions
Problem solving	• Applies methodical processes to collect and evaluate organisational information for web publication
Self-management	• Demonstrates personal responsibility for adherence to legal/regulatory responsibilities applicable to own work context

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SKILL	DESCRIPTION
Technology	• Uses digital systems and tools to access websites, publish on a website and write hypertext mark-up language (HTML) code

Unit Mapping Information

Supersedes and is equivalent to ICTICT407 Maintain website information standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT434 Maintain website information standards

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- apply at least three different industry standard programming practices in the preparation, maintenance and publishing of an organisation's website.

In the course of the above, the candidate must:

- comply with organisation, legislative and industry requirements
- develop content to comply with policies applicable to cancellations, returns and refunds
- display a site accessible to a variety of customers via electronic communication
- develop and modify information to meet e-commerce interaction requirements.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- consumer protection legislation
- content features including clarity and readability
- electronic commerce modelling language
- information architecture principles required to maintain website information standards
- instructional design principles required to maintain website information standards
- obligations of merchants, service providers and customers in maintaining website information standards
- implementation and testing procedures applicable to:
  - limitations and legislative restrictions display
  - shipping information displays
  - order and cancellation capacity of website
  - client communication facilities

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- organisational standards, requirements and documentation required to maintain website information standards
- privacy legislation applicable to maintaining website information standards.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- organisational policies, procedures and guidelines applicable to maintaining website information standards
- customer service manuals and general data
- information standards for legislative and organisational requirements applicable to maintaining website information standards
- software and web development tools.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT435 Create technical documentation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to create technical documentation that is clear and understandable for the target audience and both easy to navigate and apply.

It applies to individuals working as technical writers, designers, developers and support staff, who are required to produce technical support documents of Information and Communications Technology (ICT) related work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to produce technical documentation	1.1 Identify and evaluate technical documentation requirements and confirm details with client 1.2 Investigate and determine industry standards for technical documentation requirements 1.3 Define and document scope of work to be produced 1.4 Validate and confirm scope of work with client
2. Design and develop technical documentation	2.1 Identify technical documentation information requirements 2.2 Create document templates and style guides consistent with information requirements

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Assess and document ICT system functionality 2.3 Extract content that meets information requirements according to copyright restrictions 2.4 Develop structure of technical documentation and validate with client 2.5 Write technical documentation based on template and scope of work using information gathered 2.6 Apply content format and style according to documentation standards and templates
3. Finalise technical documentation and prepare for publication	3.1 Submit technical documentation to required personnel for review 3.2 Gather and analyse feedback and implement required changes and improvements to technical documentation 3.3 Review and edit technical documentation and confirm technical and grammatical accuracy 3.4 Confirm completed technical documentation meets client requirements and scope of work 3.5 Submit to required personnel for final sign off and approval to prepare publication 3.6 Prepare technical documentation for publication and distribution using applicable channels
4. Finalise technical documentation production	4.1 Confirm all technical documentation and approval procedures have been performed 4.2 Review and assess impact of technical documentation creation 4.3 Evaluate and report on technical documentation creation procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	• Identifies and evaluates organisational documentation and standards, and a range of online and hard copy text containing technical project related terminology and diagrams, then applies information to the development of technical documentation • Interprets and comprehends a large range of diagrams,

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	icons and computer-generated text
Writing	• Translates technical terminology into plain English and confirms viewers have a complete understanding of requirements • Develops technical documents to organisational standards using organisational naming conventions, terminology, style and format
Oral communication	• Confirms understanding of requirements, presents information and obtains feedback using applicable language
Teamwork	• Selects form, channel and mode of communication for a specific purpose applicable to own role, when communicating with others
Initiative and Enterprise	• Identifies implications of legal and regulatory responsibilities applicable to own work and general legal principles applicable across work contexts • Automatically implements standard procedures for routine decisions
Self-management	• Takes responsibility for planning and organising own workload, identifying ways of sequencing and combining elements for greater efficiency
Technology	• Uses digital systems and tools to access, organise, analyse and display information applicable to role

Unit Mapping Information

Supersedes and is equivalent to ICTICT408 Create technical documentation.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT435 Create technical documentation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- create at least two separate technical documents, each for different ICT products, on separate occasions.

In the course of the above, the candidate must:

- determine and comply with industry standards for technical documentation requirements
- establish customer needs
- design, and develop and write technical documentation, including system, procedures, training material and user guides, incorporating applicable standards
- gather, analyse and incorporate feedback from clients and required personnel.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- technical documentation structure, including:
  - flow of information
  - style
  - tone
  - content format
- technical documentation content features, documentation publication and distribution procedures
- principles of document design, web design and usability applicable to creating technical documentation
- functions and features of templates and style guides
- instructional design principles applicable to creating technical documentation

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- organisational policies, procedures and standards that cover document design.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- technical documentation specifications
- industry documentation standards
- organisational resources and documentation
- information about ICT system, platform, network or application being documented
- word processing software.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT436 Develop macros and templates for clients using standard products

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to develop macros and templates for clients using industry recognised software applications.

It applies to individuals working in an office environment, who achieve a degree of self-sufficiency as an advanced Information and Communications technology (ICT) user, and who support software applications activities in the workplace.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine macro and template requirements	1.1 Identify organisational macro and template requirements according to organisational policies and guidelines 1.2 Determine macro and template specifications for software application use 1.3 Determine documentation requirements 1.4 Confirm macro and template specifications align to organisational requirements, policies and procedures with required personnel
2. Develop macro and template	2.1 Create macro and template using required software application according to specifications

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Present macro and template to required personnel 2.3 Seek feedback from required personnel 2.4 Update and amend macro and template as required
3. Finalise macro and template	3.1 Document support and instruction requirements according to organisational requirements and guidelines 3.2 Provide documentation to required personnel 3.3 Obtain final task sign off from required personnel

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Oral communication	• Articulates using industry standard, technical language and plain English to convey ideas and seek feedback
Reading	• Reviews a range of written and online texts to identify organisational guidelines and requirements applicable to job role
Writing	• Develops macros using industry standard macro terminology, syntax and conventions • Develops templates using organisational guidelines for terminology, to address format, logos and document structure • Uses plain English and technical terminology to comply with documentation requirements and develop support documentation
Teamwork	• Identifies requirements of communication exchanges, selecting channels, format, tone and content to suit purpose and audience
Planning and organising	• Demonstrates responsibility for planning and organising own workload, identifying ways of sequencing and combining elements for greater efficiency
Problem solving	• Demonstrates responsibility for addressing predictable problems in familiar work contexts
Self-management	• Follows explicit and implicit protocols and meets expectations applicable to own role
Technology	• Identifies purposes, specific functions and key features of common digital systems and tools, and operates them to complete routine tasks

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Unit Mapping Information

Supersedes and is equivalent to ICTICT409 Develop macros and templates for clients using standard products.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT436 Develop macros and templates for clients using standard products

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop at least two macros and two templates using at least two industry recognised software application packages.

In the course of the above, the candidate must:

- determine client needs and specifications
- document process according to organisational procedures.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- features and functions of industry standard categories of commercial computing packages, including procedures for:
  - creating macros and using default templates supplied by the software application package
  - creating new macros and templates
- features and functions of software and hardware used for developing macros and templates supported by the organisation
- organisational procedures applicable to developing macros and templates.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

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- documents detailing organisational policies
- internet connection
- workstation hardware and software
- style guides and design brief
- technical documentation
- use of industry standard software applicable to developing macros and templates.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT437 Conduct post-implementation ICT system reviews

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to plan and execute Information and Communications Technology (ICT) system reviews following implementation at a point where the system has been operational for some time.

It applies to individuals working in a range of ICT development roles in small to medium enterprises (SMEs) and who are required to review the success of a project with a view to contributing to best practice for future projects.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to review ICT system	1.1 Identify criteria procedures and system implementation results according to organisational guidelines 1.2 Determine review method according to organisational requirements 1.3 Determine time frame of review and communicate with required personnel 1.4 Prepare work schedule for review according to organisational requirements

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ELEMENT	PERFORMANCE CRITERIA
2. Document and conduct systems review	2.1 Document review purpose and process according to organisational requirements 2.2 Distribute document to required personnel 2.3 Conduct systems review according to systems review plan 2.4 Implement data retrieval methods according to systems review plan
3. Document and publish review findings	3.1 Document systems review findings according to organisational requirements 3.2 Distribute review results to required personnel 3.3 Seek and respond to feedback 3.4 Obtain final review sign off from required personnel 3.5 Lodge finalised review document according to organisational policies and procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Oral communication	• Uses listening and questioning techniques to elicit data, articulate review and scheduling requirements and obtain feedback
Reading	• Identifies and analyses system specific data, output and feedback containing technical terminology to identify system implementation results
Writing	• Uses vocabulary, grammatical structures, applicable terminology, formatting and structure applicable to specific task and organisation to develop review criteria, create a schedule and produce reports
Teamwork	• Uses required form, channel and mode of communication for a specific purpose applicable to own role
Planning and organising	• Takes responsibility for planning and organising own workload and identifying ways of sequencing and combining elements
Problem solving	• Initiates standard diagnostic procedures when responding to familiar and unfamiliar problems within immediate context
Self-management	• Complies with explicit organisational policies and procedures
Technology	• Identifies purposes, specific functions and key features of common digital systems and tools, and operates them to complete

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SKILL	DESCRIPTION
	routine tasks

Unit Mapping Information

Supersedes and is equivalent to ICTICT410 Conduct post-implementation ICT system reviews.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT437 Conduct post-implementation ICT system reviews

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- plan, conduct and communicate one review of an established and operational system.

In the course of the above, the candidate must:

- document systems review plan, finalised process and results.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- key organisational policies, procedures and documentation required to conduct post-implementation ICT systems reviews, including those related to:
  - organisational business domain
  - implementation process and issues
  - project and review methodologies and deliverables
  - document lodgement standards
- industry standard hardware and software products required when conducting post-implementation ICT systems reviews.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- required hardware where software installation may be performed
- use of industry standard software, including server and workstation hardware and software

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- documents detailing organisational guidelines and policies for conducting post-implementation ICT system reviews
- internet connection
- operational system and specifications.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT438 Select, configure and deploy software and hardware testing tools

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to identify required software and hardware and deploy as diagnostic and testing tools.

It applies to individuals in a wide range of Information and Communications Technology (ICT) areas who are required to test software and hardware.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify process operational requirements	1.1 Identify testing process requirements according to organisational requirements 1.2 Identify any process conflicts and overlapping according to organisational requirements 1.3 Document and validate functional requirements according to organisational policies and procedures 1.4 Identify and confirm required resources, budget and manpower according to organisational requirements
2. Select hardware and software	2.1 Identify required hardware and software tools according to resource and budget requirements 2.2 Identify and analyse required products and equipment

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ELEMENT	PERFORMANCE CRITERIA
	interdependencies 2.3 Document products, equipment, hardware and software requirements according to organisational policies and procedures
3. Configure and test hardware and software	3.1 Install and configure required hardware and software tools according to vendor guidelines and organisational requirements 3.2 Configure systems architecture according to vendor guidelines 3.3 Prepare, schedule and execute functionality tests and record outcomes according to organisational procedures 3.4 Track, interpret and correct functionality errors, as required 3.5 Document and lodge finalised hardware and software configuration according to organisational requirements and procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Description
Numeracy	• Performs mathematical calculations and interprets complex financial information
Reading	• Demonstrates comprehension of a large range of complex textual and diagrammatic information with systems related terminology • Determines organisational requirements and standards and selects applicable tools and processes
Writing	• Uses spelling and grammar together with applicable systems related terminology to document progress and results and develop user documentation • Converts jargon, terminology and acronyms into plain English • Uses specific scripting and syntax to install, configure and program system to user requirements
Teamwork	• Communicates information and resources, provides training voluntarily and feedback to client when required
Planning and organising	• Takes responsibility for planning and organising own workload, identifying ways of sequencing and combining elements for greater efficiency

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Skill	Description
Problem solving	• Initiates standard diagnostic procedures when responding to familiar and unfamiliar problems within immediate context
Self-management	• Implements explicit and implicit protocols and meets expectations applicable to own role
Technology	• Identifies purposes, specific functions and key features of common digital systems and tools, and operates them to complete routine tasks

Unit Mapping Information

Supersedes and is equivalent to ICTICT411 Select and employ software and hardware testing tools.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT438 Select, configure and deploy software and hardware testing tools

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify and configure hardware and software tools to test one required environment.

In the course of the above, the candidate must:

- evaluate hardware and software that meet functional requirements
- select and use applicable automating tools
- develop automating process and produce a measurable outcome according to specified requirements
- validate hardware and software performance against client usage requirements
- document functional requirements and finalised process

Knowledge Evidence

To The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- batch scripting of nominated automating software routines
- applicable aspects of the client business domain applicable to using software and hardware testing tools
- vendor product directions
- industry standard hardware and software products, and their features and capabilities including:
  - development tools, including animation development tools
  - development package automating options
  - third-party tools for automating a range of software applications
  - media management tools
  - interaction between applicable hardware and software products.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- industry standard hardware and software
- industry standard automating vendor products
- client requirements documentation
- organisational requirements.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT440 Develop service level agreements

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to formulate, implement, monitor and adjust service level agreements (SLAs).

It applies to individuals who work in the Information and Communications Technologies (ICT) industry and provide ICT support to small to medium enterprises (SMEs).

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for development of service level agreements (SLAs)	1.1 Determine organisational service standards, values and culture 1.2 Identify and categorise goods and service offerings provided by the organisation 1.3 Identify and determine existing SLAs
2. Develop SLA for consultation	2.1 Identify service needs and service level according to organisational requirements 2.2 Identify any other SLA requirements 2.3 Develop and document draft SLA according to organisational policies, procedures and guidelines
3. Negotiate client support service	3.1 Seek and respond to draft SLA feedback from

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ELEMENT	PERFORMANCE CRITERIA
	required personnel 3.2 Present proposed cost and timeframes and respond to feedback from required personnel 3.3 Negotiate terms of proposed SLA and respond to feedback from required personnel 3.4 Document and lodge SLA agreement according to organisational policies and procedures
4. Adjust and finalise SLA procedures	4.1 Determine compatibility of SLA to organisational requirements, policies and procedures 4.2 Seek and respond to SLA compatibility feedback from required personnel 4.3 Determine and implement any adjustments to organisational support according to organisational requirements 4.4 Document any changes to SLA and lodge document according to organisational policies and procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Oral communication	• Uses listening and questioning techniques to elicit client requirements, organisational information and obtain feedback Presents information and negotiates SLAs using reflective responses
Reading	• Identifies and evaluates complex business documentation in a variety of formats containing technical terminology and financial information • Identifies organisational standards, SLA requirements and client feedback from technically written, complex documentation
Writing	• Uses plain English, spelling, applicable grammatical structures and terminology, numerical and financial information • Uses required formatting and document structure applicable to job role and organisation to develop SLAs
Teamwork	• Identifies requirements of important communication exchanges, selecting applicable channels, format, tone and content according to purpose and audience
Planning and	• Develops plans and manages relatively complex tasks with an

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SKILL	DESCRIPTION
organising	awareness of how they may contribute to longer term operational and strategic goals
Self-management	• Responds to both explicit and implicit protocols within familiar work contexts • Manages outcomes of routine decisions directly applicable to own role

Unit Mapping Information

Supersedes and is not equivalent to ICTICT413 Relate to clients on a business level.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT440 Develop service level agreements

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify agreement needs, develop and implement at least one Service Level Agreement (SLA).

In the course of the above, the candidate must:

- negotiate client requirements for support service within quality, time, target performance and cost parameters
- evaluate and document finalised process according to organisational procedures.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard business practices, including:
  - change management
  - information gathering techniques
  - planning process, including development of Information and Communications Technology (ICT) business solutions
  - the process for the preparation of reports
- applicable features and vendor product directions of industry standard hardware and software products required when developing service level agreements
- legal principles of commercial contracts and service level agreements
- applicable organisational policies, plans and procedures including contracting
- concepts relating to negotiation and business relationships.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- applicable organisational policies, procedures and SLAs
- contexts for negotiating SLAs
- industry standard ICT hardware and software products.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT441 Provide one-to-one instructions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to convey technical information to an individual client for their specific use.

It applies to individuals who are competent in a wide range of general Information and Communications Technologies (ICT), and support clients in technical areas, including instructing others on an individual basis.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine client needs	1.1 Identify learning needs of one-to-one instruction according to client requirements 1.2 Define required one-to-one method of instruction delivery 1.3 Determine any additional factors for one-to-one instruction delivery according to learning needs
2. Organise instruction resources and plan	2.1 Determine required instruction resources according to instruction requirements 2.2 Prepare and document instruction session according to learning needs and instruction requirements 2.3 Provide instruction plan document to required personnel and seek and respond to feedback

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ELEMENT	PERFORMANCE CRITERIA
3. Provide instruction	3.1 Gather required resources according to instruction plan 3.2 Provide instruction session according to instruction plan 3.3 Document instruction session outcomes according to organisational guidelines and procedures 3.4 Identify and refer further instruction requirements and training needs for client
4. Obtain client feedback	4.1 Write and distribute evaluation feedback mechanism to client 4.2 Retrieve, review and identify how client feedback can be incorporated for future instructions 4.3 Report on instruction and client feedback evaluation and submit to required personnel

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Reading	• Reviews documentation to identify information relating to learning needs and delivery method requirements
Writing	• Translates technical terminology in order to convey and obtain explicit information for a specific audience
Teamwork	• Demonstrates an understanding of requirements of important communication exchanges, selecting applicable channels, format, tone and content according to purpose and audience
Planning and organising	• Uses a combination of planning processes and an increasingly intuitive understanding of context to identify applicable information, including required resources and time required to undertake tasks
Self-management	• Analyses explicit and implicit protocols within familiar work contexts • Manages outcomes of routine decisions directly applicable to own role

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Unit Mapping Information

Supersedes and is equivalent to ICTICT415 Provide one-to-one instruction.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT441 Provide one-to-one instructions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- determine instructions, prepare resources and convey technical information to individual clients for their specific use on at least one occasion.

In the course of the above, the candidate must:

- empathise with learner and accommodate different cultures
- instruct in a clear, concise and coherent manner
- convey meanings of technical jargon.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard delivery and evaluation methods
- adult learning principles and styles applicable to one-to-one instructions
- communication and facilitation techniques applicable to one-to-one instructions
- critical behaviour issues and problems that can occur with one-on-one instruction
- industry standard Information and Communications Technology (ICT) terms and terminology
- organisational procedures applicable to providing one-to-one instruction.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

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- client learning requirements
- documentation outlining organisation's policies, procedures and guidelines that may impact on how instructions are delivered
- required ICT tools, hardware and software.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT443 Work collaboratively in the ICT industry

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills required to work collaboratively in virtual Information and Communications (ICT) team environments to achieve organisational objectives. It includes contributing to performance and capability within teams, participating in team activities, exchanging knowledge and skills and providing support to team members.

It applies to all individuals who work in teams that utilise multiple technologies to complete a collective task.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify team protocols requirements for working collaboratively in a virtual environment	1.1 Identify team protocols for virtual ways of working, including cyber safety protocol 1.2 Identify communication tools and technology available to support teams working collaboratively in virtual environments 1.3 Determine roles and responsibilities of team members according to team communication protocols 1.4 Determine areas to improve team protocols for working collaboratively in a virtual environment
2. Develop protocols to	2.1 Review technology utilised to support teams working

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ELEMENT	PERFORMANCE CRITERIA
work collaboratively in a virtual environment	collaboratively in virtual environments 2.2 Develop protocols to share knowledge collaboratively in a virtual environment according to work details and team objectives 2.3 Develop cyber security protocols in accordance with organisational cyber security procedures
3. Review compliance with protocols to work collaboratively in a virtual environment	3.1 Review protocols utilised to support teams working collaboratively in virtual environments 3.2 Seek feedback from relevant personnel on team communication practices according to working collaboratively in virtual environments protocols 3.3 Determine improvements to future work protocols in virtual environments

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Description
Oral communication	• Uses listening and questioning techniques and project specific terminology to liaise with team members, present information and obtain feedback
Teamwork	• Collaborates with others to achieve joint outcomes, playing an active role in facilitating group interaction, influencing direction and occasionally taking a leadership role
Problem solving	• Responds intuitively to problems requiring immediate attention, drawing on past experience to devise solutions
Technology	• Uses a range of digitally based technology and applications to access and filter data, extract, organise, integrate and share information

Unit Mapping Information

Supersedes and is equivalent to ICTICT419 Work effectively in the digital media industry.

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Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT443 Work collaboratively in the ICT industry

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop at least two protocols for teams working collaboratively in virtual environments that help achieve team objectives
- identify at least two communication tools and technology to support teams working collaboratively in virtual environments.

In the course of the above, the candidate must:

- review compliance of protocols to work collaboratively in a virtual environment
- seek and respond to feedback
- share knowledge and information according to work details, team objectives, organisational policies and procedures.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- legislation, codes, regulations and standards, and work health and safety requirements for collaborative work arrangements
- organisational cyber security protocols
- protocols for virtual ways of working, including:
  - virtual platforms used
  - frequency of virtual platform use
- functions and features of team communication strategies
- communication techniques in virtual teams
- methods of mediating conflicting perspectives in virtual teams
- roles and responsibilities of team members in promoting collaborative work environments

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- constructive feedback techniques.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- documentation of the organisation's communication tools and technology available to support virtual, remote and collocated teams
- policies and guidelines on using collaborative communication tools
- industry standard communication tools, hardware and software
- legislative, regulatory and industry codes of practice and organisational guidelines that impact collaborative work
- industry standard ICT equipment and technology to research and analyse industry information.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT444 Develop client user interfaces

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to design and document a client user interface that integrates with front-end applications.

It applies to individuals who work in small-to-medium enterprises (SMEs) as software designers and developers and have achieved a degree of autonomy.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare design for interface	1.1 Identify user needs from existing documentation and organisational requirements 1.2 Determine impact of user interface design according to system environment 1.3 Determine and review organisational goals and consistency to organisational styles 1.4 Define user interface design from data query and report formats 1.5 Document needs and findings and obtain approval for proposed interface from required personnel
2. Design and document user interface	2.1 Design menu structures according to acceptance criteria and organisational requirements

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Design screen dialogues according to acceptance criteria and organisational requirements 2.3 Design batch procedures where required according to technical specifications and acceptance criteria 2.4 Design online help and prototype tutorials according to organisational requirements
3. Finalise client user interface process	3.1 Document prototype according to organisational policies and procedures 3.2 Seek and respond to prototype feedback from required organisational personnel 3.3 Submit prototype document and obtain final sign off from required personnel and task requirements

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Description
Oral communication	• Uses listening and questioning techniques and applicable language to gather information, confirm understanding of requirements, liaise with the client and obtain feedback
Reading	• Interprets a variety of hard copy and online technical and design information to identify system environment, organisational requirements and clarify user requirements
Writing	• Uses spelling and grammar, plain English and specific terminology to produce documents and tutorials to organisational guidelines and user requirements • Uses applicable programming syntax and conventions to perform job role • Uses concise, plain English and identifies and applies organisational designs, styles, interface and writing principles consistently on titles, text links, buttons, error messages and other interface objects
Planning and organising	• Analyses implications of organisational policies and procedures when planning and undertaking work • Develops plans to manage relatively complex, non-routine tasks with an awareness of how they may contribute to longer term operational and strategic goals
Self-management	• Identifies requirements of important communication exchanges, selecting applicable channels, format, tone and content according

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Skill	Description
	to purpose and audience
Technology	• Uses a range of digitally based technology and applications to access and filter data, extract, organise, integrate and share information

Unit Mapping Information

Supersedes and is equivalent to ICTICT420 Develop client user interface.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT444 Develop client user interfaces

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design and integrate at least one client user interface prototype.

In the course of the above, the candidate must:

- determine impact of user interface design in the system environment and identify required data query and report formats
- document finalised process according to organisational procedures.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- client business area and needs and responsibilities within area
- industry standard design principles applicable to developing client user interfaces
- general features and capabilities of industry standard hardware and software products and user interfaces
- industry standard front-end systems and applications
- GUI and web design principles applicable to developing client user interfaces
- organisational guidelines, policies and procedures applicable to developing client user interfaces.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

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- design specifications
- organisational standards for documentation and version control
- project management process and hierarchy
- a usability test plan
- industry standard usability metrics.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT445 Connect and configure devices and hardware components

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to install and configure devices and hardware components including mobile devices.

It applies to individuals who use a range of technical skills to configure and connect a device to other devices and maintain system components in a home or workplace environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify devices and hardware components	1.1 Identify and categorise types of devices, including their components and characteristics that require installation and configuration 1.2 Identify and categorise peripheral hardware components that require installation and configuration 1.3 Define purpose, characteristics and suitability of device types and peripheral hardware components according to installation and configuration requirements
2. Plan and configure device components	2.1 Develop and document installation and configuration plan, with prioritised task and contingency arrangements, according to installation and configuration requirements

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	2.2 Obtain approval for plan from required personnel 2.3 Install and configure components according to plan, installation procedures and technical specifications 2.4 Test components and confirms error-free, enhanced performance
3. Evaluate modified system	3.1 Evaluate device connectivity according to vendor and technical specifications 3.2 Seek and respond to user feedback and update any identified performance issues 3.3 Evaluate and confirm device changes with client and required personnel 3.4 Document finalised process and outcomes and submit to required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	**Description**
Learning	• Uses each experience to reflect on ways in which variables impact on outcomes and to gain insights into what constitute effective strategies and practices for future work
Numeracy	• Identifies and interprets numerical data associated with device and component specifications
Reading	• Interprets and analyses online and hard copy documentation containing complex Information Communications Technology (ICT) related terminology, acronyms and concepts
Writing	• Uses spelling, grammar and plain English to articulate to audience • Uses ICT specific terminology, diagrams and syntax to convey explicit recommendations, requirements and information
Initiative and enterprise	• Develops strategies to manage relatively complex, non-routine tasks with an awareness of how they contribute to longer term operational and organisational goals
Planning and organising	• Identifies implications of organisational policies and procedures when negotiating, planning and undertaking work
Problem solving	• Responds to familiar problems requiring immediate attention, quickly drawing on past experience to devise solutions
Self-management	• Keeps up to date with organisational policies and procedures applicable to own rights and responsibilities

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Skill	Description
Technology	• Interprets purpose, needs and limitations when selecting devices and applications for different tasks

Unit Mapping Information

Supersedes and is equivalent to ICTICT421 Connect, maintain and configure hardware components.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT445 Connect and configure devices and hardware components

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- connect and configure at least one device and at least two related and required components.

In the course of the above, the candidate must:

- install components across at least three different situations and account for at least one unexpected contingency
- modify system's hardware, internal hardware and peripheral hardware components according to task requirements
- plan modification and connection of hardware, internal hardware and peripheral hardware components according to vendor and technical specifications
- test components and rectify identified problems.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- different types, characteristics and functions of different devices, hardware, internal hardware and peripheral hardware components including:
  - types
  - characteristics
  - functions
- diagnostic and testing hardware and software tools, systems and functions
- operating systems (OS) related to configuration and testing
- industry standard hardware and software products
- organisational policies and procedures and manufacturer's instructions
- installation and configuration plans for component installation.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- devices, including required hardware, internal hardware and peripheral components for installation and configuration, including:
  - a mobile smartphone
  - tablet
  - computer
- industry standard performance testing software
- technical manuals, tools and test equipment.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT446 Apply ICT service management principles

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to apply the principles of service management when supporting and resolving Information and Communications Technology (ICT) service desk cases.

It applies to individuals who work in ICT service roles and are responsible for providing ICT service desk support.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to work on service desk	1.1 Identify organisational policies and procedures of service desk quality 1.2 Identify service management principles 1.3 Access and prepare service desk environment according to organisational procedures 1.4 Test service desk systems are working to function according to organisational procedures
2. Support service desk	2.1 Operate service desk systems to open a new service case 2.2 Investigate and confirm nature of service case 2.3 Inform customer of service case progression according

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ELEMENT	PERFORMANCE CRITERIA
	to service management principles 2.4 Escalate service case according to service management principles, when required 2.5 Confirm service case is resolved 2.6 Implement service desk closure principles 2.7 Seek client feedback on closure of service case
3. Apply continuous improvement to service desk	3.1 Review service desk records according to service management principles 3.2 Identify potential service desk areas for improvement 3.3 Plan implementation of service desk performance improvement 3.4 Document proposed improvements and submit to required personnel
4. Finalise service desk procedures	4.1 Confirm all service desk and management procedures have been performed 4.2 Review and assess impact of service desk support according to service management principles 4.3 Evaluate and report on service desk procedures according to service management principles

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	• Identifies and interprets textual and organisational documentation containing ICT specific terminology to service desk quality and review records
Writing	• Uses language, spelling and grammar and applicable ICT terminology to obtain feedback and document proposed improvements
Oral Communication	• Uses listening and questioning techniques together with reflective responses to elicit customer information and give and receive feedback
Teamwork	• Identifies requirements of important communication exchanges, selecting applicable channels, format, tone and content according to purpose and audience
Self-management	• Takes responsibility for defining key aspects of own workload, balancing own needs and priorities with customers' needs

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Technology	• Interprets principles, concepts, language and practices associated with the digital world and uses these to troubleshoot and understand uses and potential of new technology

Unit Mapping Information

Supersedes and is equivalent to ICTICT422 Participate in ICT services.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT446 Apply ICT service management principles

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- apply service desk management principles in the provision of service desk support for two different services cases, on separate occasions.

In the course of the above, the candidate must:

- access, test and operate service desk systems according to organisational procedures
- investigate and confirm nature of service case and provide service desk support
- plan and document strategies to improve service desk performance.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- service management principles
- service desk procedures
- service desk system operation and testing
- service case support, management and closure procedures
- organisational guidelines, policies and procedures applicable to service desk management, including escalation policy and procedures
- industry standard practices in ICT service desk support
- basic technical service management terminology
- legislation, codes of practice and other formal agreements directly impacting resolution processes
- quality assurance applicable to service desk management.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- service management principles
- customer, client or user with service case that requires resolution
- legislation, codes of practice and other formal agreements that directly impact on resolution processes
- service logs and procedures
- service desk software and systems
- customer contact technologies.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT447 Work effectively in agile environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to participate in the delivery of ICT projects using industry-endorsed agile project management methodologies.

It applies to those who, whilst working under a level of supervision, work within an agile environment where the ability to deliver project increments is required. It includes ICT roles such as software, web or gaming developers within development environments, project managers, and helpdesk support officers who work with many different project management styles and environments.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Set up agile projects	1.1 Identify project characteristics and confirm agile project management methodology and timelines 1.2 Gather project requirements and confirm with client 1.3 Discuss and define team member roles and responsibilities and confirm own work role within agile project 1.4 Confirm minimal viable increments according to project requirements and define definition of done 1.5 Determine increment timelines and stages of increment delivery

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	1.6 Determine and implement communication tools with team
2. Deliver agile project increments	2.1 Determine and contribute towards progress trackers and version control procedures for agile project 2.2 Initiate project increment work according to agile methodologies and version control procedures 2.3 Complete project increment according to agile methodologies 2.4 Commit project work to online environment and confirm project progression with team and project manager
3. Finalise agile project	3.1 Confirm all increments have been completed according to project requirements 3.2 Review and assess impact of contributions to agile project and team performance 3.3 Report on contributions and discuss with team 3.4 Participate in agile project debrief and document outcomes and lessons learnt

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Writing	• Produces materials and written updates using agile communication tools
Teamwork	• Selects the required form, channel and mode of communication for a specific purpose to own role, when communicating with others
Planning and organising	• Plans routine tasks with familiar goals and outcomes, taking some limited responsibility for decisions regarding sequencing and timing • Participates in team planning of agile increments
Self-management	• Evaluates task completion and the impact of such completions
Technology	• Interprets the purposes, specific functions and key features of digital systems and tools, and operates them effectively to complete routine agile project tasks

Unit Mapping Information

No equivalent unit. New unit.

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Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT447 Work effectively in agile environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- participate in the delivery of at least two ICT project using the agile project management methodology.

In the course of the above, the candidate must:

- utilise project and communication work tools and platforms
- participate in agile meetings
- uphold communication channels according to agile methodologies and team agreement.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- agile methodologies, including:
  - project management
  - team member roles and responsibilities
  - characteristics of increments, increment timelines and stages of increment delivery
  - project work tools and platforms
  - communication tools and platforms
  - agile meetings, including:
    - huddles
    - KANBAN
    - scrums
    - sprints
  - project debrief
  - work task prioritisation requirements and contingencies

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    - version control and progress tracking systems and processes.
- functions and features of ICT hardware and project management software required for managing agile projects.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- equipment, hardware and industry software packages required for agile project work
- a range of simulated work tasks and project within agile project management teams
- simulated working environment and agile project team
- the internet
- online agile project management tools
- communication tools
- agile methodology documentation and guiding information.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT448 Prepare electronic portfolios of work

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills required to prepare, build and share electronic portfolios to display pieces of finished product and work on behalf of an individual, team or business.

It applies to individuals in multiple Information Communications and Technology (ICT) roles, including software, programming, gaming and web designers, developers, architects and business analysts, who are expected to maintain a professional online or business portfolio of work throughout their professional career at a given point in time. Portfolios, in this instance, can be used to get a job, sell work to a potential client or showcase skills, capabilities, intellectual property and product to the public.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to create portfolios	1.1 Research and identify industry electronic portfolio options and standards 1.2 Assess and select hosting platform according to portfolio requirements 1.3 Identify required sections and elements of electronic portfolio 1.4 Gather documentation and examples of work according to portfolio requirements

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2. Create portfolios to specifications	2.1 Create portfolio structure according to portfolio specifications 2.2 Upload work and match design specification according to portfolio specifications 2.3 Style electronic portfolio pages according to specifications 2.4 Add accompanying explanatory text and annotations according to portfolio specifications
3. Finalise portfolios in required format	3.1 Test electronic portfolio on required browsers and devices and remediate viruses and errors 3.2 Validate electronic portfolio against industry standards 3.3 Update, save and back up electronic portfolio to required storage units 3.4 Share electronic portfolio according to industry standards 3.5 Submit portfolio and obtain final task sign off from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Analyses and evaluates textual information and user guides to integrate ideas and meet technical requirements
Writing	• Uses required programming syntax, language and conventions to create portfolio
Planning and organising	• Articulates and selects bodies of work and communication that reflect professional brand and depth and breadth of capability
Problem solving	• Applies problem-solving processes and scripting techniques to resolve less predictable problems
Self-management	• Takes responsibility for outcomes and maintenance of live product • Uses exploration, analytical and lateral thinking to identify new ideas and adapt existing ideas to context
Technology	• Interprets purposes, specific functions and key features of common digital systems and tools, websites and systems • Uses digital systems and tools to create and save files in required formats including applicable website hosts, saving locations and required hardware functions • Uses cyber safe techniques and hygiene to maintain portfolio integrity

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Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT448 Prepare electronic portfolios of work

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- create at least one electronic portfolio with a minimum of three different examples of work and text.

In the course of the above, the candidate must:

- test and validate portfolio on at least two different devices and in two different browsers
- share portfolio to at least two different locations online
- save and back up portfolio to at least one location.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- functions and features of:
  - websites
  - platforms
  - software
  - hardware
  - storage units
  - design specifications
- electronic portfolio options, structures, requirements and standards
- industry standard hosting platforms
- basic scripting, testing and programming techniques and languages
- common viruses and errors and remediation processes
- processes to validate electronic portfolios

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- industry standards for documentation, style and professional brand techniques
- sign-off requirements applicable to electronic portfolio work
- copyright, privacy, proprietary and intellectual property laws, legislation and policy standards
- organisational style guides and procedures applicable to preparing electronic portfolios.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- industry specific platforms, hardware, devices and websites
- the internet, including connectivity and different browsers
- storage devices and industry standard services.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT449 Use version control systems in development environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to use version control systems to track content, versions and maintain a code repository of work when developing in an ICT environment.

It applies to individuals who work in a development environment and create a history of changes to track multiple versions of their own or team's work. These development environments include processes of designing, building and testing code and product.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to use version control systems (VCS)	1.1 Research and choose version control system (VCS) according to organisational requirements 1.2 Identify required subversion and VCS pre-installation factors 1.3 Determine and communicate installation disruption to required personnel according to organisational policies and procedures 1.4 Install VCS and create personal account and push changes from branch according to VCS service provider and organisational requirements 1.5 Configure tools and user interface of VCS according to

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	organisational requirements
2. Build files in VCS	2.1 Create local repository according to service provider procedures 2.2 Create required directory according to service provider procedures and organisational requirements 2.3 Create and access required staging environment structures and branches 2.4 Create and access files in the repository according to service provider procedures
3. Test VCS	3.1 Add and commit files to staging environment 3.2 Commit required files to local depository 3.3 Locate track of initial version change and confirm new status according to service provider procedures 3.4 Respond to remote pull requests according to service provider procedures 3.5 Retrieve remote commits and locally merge according to service provider procedures
4. Finalise use of VCS	4.1 Document VCS test outcomes according to organisational requirements 4.2 Submit documented outcomes to required personnel 4.3 Respond to feedback on documented outcomes from required personnel 4.4 Obtain final task sign off from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria

SKILL	**DESCRIPTION**
Oral communication	• Uses listening and questioning techniques and effective mode of communication to confirm requirements and negotiate outcomes using required language
Reading	• Analyses textual information to establish requirements
Writing	• Prepares documentation for final outcomes using comprehensive structure, layout and complex industry language
Teamwork	• Applies protocols governing what to communicate, with whom and how, in a range of work contexts
Planning and	• Plans a range of routine, and some non-routine, tasks, accepting stated goals and required outcomes

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SKILL	DESCRIPTION
organising	
Problem solving	• Gathers information and identifies and evaluates several choices against a limited set of criteria • Applies formal problem-solving processes when tackling unfamiliar problems, breaking complex issues into manageable parts and identifying and evaluating options for action
Self-management	• Follows explicit and implicit procedures and meets expectations associated with own role when submitting documentation for approval and completing organisational requirements
Technology	• Uses procedures and techniques to maintain articulation of version control systems

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT449 Use version control systems in development environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- plan, install, create and manage a code on one repository of work on at least three occasions.

In the course of the above, the candidate must:

- communicate down time, service interruptions and installation of service
- document final outcomes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- distributed and centralised version control systems
- web-based DevOps lifecycle tools
- DevOps automation tools
- branching, pull and push commands local/remote
- key policies, procedures and documentation required to use version control systems in development environments, including those related to:
  - repositories and working copies
  - merging and merge tools
  - working and indiscriminative commits
  - resolving conflict and backout changes
- principles and techniques of creating repositories and branch workflows
- version control industry standard best practices
- distributed version control industry standard best practices
- workflow processes applicable to using version control systems.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- the internet, including connectivity
- required hardware, software and applications
- simulated work tasks and projects
- industry standard version control systems and vendor products
- organisation's ICT policies, procedures and best practice guidelines imperative to task.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT450 Identify and use applications for a distributed ledger

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to administer and manage blockchain applications for a distributed ledger. It involves the identification of blockchain applications suitable to specified business needs, and the implementation and deployment of the application at various stages throughout the business model.

It applies to those who perform a range of administrative and project management tasks and assess and implement new technologies to business models in Information and Communications Technology (ICT) and related industries.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine distributed ledger technology (DLT) application suitability	1.1 Identify purpose and benefit of industry standard DLT applications according to business needs 1.2 Identify business processes and transaction types suitable for DLT application 1.3 Identify business use-case according to business needs 1.4 Determine consensus mechanism and protocols according to business needs 1.5 Identify required DLT service provider platform

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	according to business needs
2. Set up DLT application	2.1 Document DLT requirements and submit to required personnel 2.2 Initiate account according to vendor specifications and business needs 2.3 Generate required accounts according to vendor specifications 2.4 Create and save genesis block 2.5 Initiate required instance according to vendor specifications 2.6 Test DLT solution against business needs 2.7 Document and confirm DLT meets business needs
3. Use distributed ledger application	3.1 Initiate required transaction from application 3.2 Confirm transaction completion with required personnel 3.3 Document back-end technical transaction process 3.4 Obtain final task sign off from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Modifies behaviour following exposure to new information
Reading	• Interprets information from relevant sources to determine organisational impacts relating to data ethics legislation
Writing	• Prepares documentation outlining technical specifications and process according to specified requirements
Planning and organising	• Takes responsibility for planning own workload and prioritising tasks for required outcomes
Self-management	• Implements standard procedures and makes decisions for routine tasks • Uses formal decision-making processes for more complex situations

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Unit Mapping Information

No equivalent unit. New unit.

Links

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Assessment Requirements for ICTICT450 Identify and use applications for a distributed ledger

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- set up and use at least one distributed ledger application to an organisational process.

In the course of the above, the candidate must:

- research business model and determine required distributed ledger application
- comply with blockchain best practices and guidelines.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- business models, processes and transaction types
- consensus mechanisms and protocols
- underlying distributed ledger technology functions and uses including:
  - blockchain principles, best practices and guidelines
  - cryptography
  - immutable database rules
  - transactional components
- industry standard functions and uses of distributed ledger applications, service provider platforms and their general capabilities
- industry standard uses for applications
- documentation techniques applicable to documenting DLT requirements
- research procedures and techniques used for determining DLT requirements.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- industry standard software and hardware to access internet and web delivered information
- vendor specifications
- platforms providing distributed ledger applications
- blockchain best practice guidelines.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT451 Comply with IP, ethics and privacy policies in ICT environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to comply with the protection and lawful use of intellectual property (IP) and to implement relevant organisational ethics and privacy policies.

It applies to individuals who are required to use IP owned by other persons and organisations, and to support organisations and stakeholders with the compliance of organisational ethics, and privacy policies.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish organisational requirements to comply with IP, ethics and privacy policy procedures	1.1 Locate types of existing and potential IP, ethics and privacy policy and procedures within the organisation 1.2 Determine and access the organisation's IP, ethics and privacy policy and procedures 1.3 Identify own role in protecting and fulfilling the requirements of the organisations IP, ethics and privacy policy and procedures to avoid infringement of IP and privacy requirements 1.4 Provide support and advice to relevant personnel

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ELEMENT	PERFORMANCE CRITERIA
	about the operations of the organisation's IP, ethics and privacy policy and procedures
2. Evaluate and implement organisational IP, ethics and privacy policy procedures	2.1 Monitor whether required personnel are abiding by organisational IP, ethics and privacy policy and procedures 2.2 Evaluate whether implemented IP, ethics and privacy policy and procedures help prevent IP and privacy infringement 2.3 Assist with the maintenance, development and implementation of IP, ethics and privacy policy and procedures 2.4 Communicate potential risks and opportunities for improvement of IP, ethics and privacy policy and procedures to relevant personnel
3. Contribute to non-compliance incident identification and recommendations	3.1 Contribute to organisational risk assessment and identification process 3.2 Review internal and external non-compliance and intellectual property infringement incidents 3.3 Recommend actions to overcome non-compliance incidents to relevant personnel 3.4 Determine and report areas of potential risk and non-compliance to relevant personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Oral communication	• Provides information using language and terminology required for audience • Obtains information from others by listening and questioning
Reading	• Selects, interprets, synthesises and critically analyses information required for compliance with IP, ethics and privacy policies
Writing	• Records information in accordance with requirements • Develops texts using language required for audience needs
Planning and organising	• Plans and implements a range of tasks directly related to own role, seeking assistance where required

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Skill	Description
Self-management	• Takes responsibility for adhering to legal and regulatory compliance with respect to own work

Unit Mapping Information

New unit.

Links

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Assessment Requirements for ICTICT451 Comply with IP, ethics and privacy policies in ICT environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- evaluate and implement at least three different types of intellectual property (IP) within an organisation
- assist, on at least two occasions, with the development and implementation of organisational IP, ethics and privacy policy and procedures.

In the course of the above, the candidate must:

- assist with maintenance of organisational IP, ethics and privacy policy procedures
- review potential risks and non-compliance incidents
- contribute to the development of non-compliance incident recommendations.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- key legislation required to evaluate and implement IP in the ICT industry
- key policies, procedures and documentation in the ICT industry, including those related to:
  - organisational IP policies and procedures
  - codes of ethics pertinent to the ICT industry
  - privacy
- key organisational communication processes and procedures related to identifying IP, ethics and privacy policies in ICT environments.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- required organisational policies, codes of practice, legislation and standards of documentation
- workplace documentation and resources
- IP case studies and, where possible, real situations
- hardware and software applicable to applying legislative and organisational policies.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT518 Research and review hardware technology options for organisations

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to research and evaluate existing and emerging technologies and hardware solutions to support organisational strategic goals.

The unit applies to those in senior roles who administer and manage information and communications technology (ICT) support in small-to-medium enterprises (SMEs) using a wide range of general ICT technologies.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine organisational needs	1.1 Establish organisational requirements and selection criteria for new technology 1.2 Review strategic goals and determine future requirements 1.3 Assess physical infrastructure and financial parameters against strategic goals 1.4 Determine and document organisational technology requirements
2. Research vendors and suppliers	2.1 Identify supplier and vendor options according to organisational technology requirements

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Source information from suppliers and vendors 2.3 Assess vendor information against industry standards 2.4 Review emerging standards and applications for compatibility with supplier and vendor information 2.5 Select suppliers and vendors according to organisational requirements
3. Evaluate and report on hardware technology options	3.1 Review and test hardware and confirm it meets organisational requirements 3.2 Identify project risks associated with identified hardware 3.3 Document findings in a report and present to required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	• Identifies, interprets and evaluates technical online and hard copy documentation containing complex terminology and diagrams to identify hardware technology that will benefit the organisation
Writing	• Uses specialised, cohesive language to present an evaluation of hardware technology to a specific audience
Numeracy	• Interprets financial information and applies mathematical calculations relating to time constraints and budgetary information
Self-management	• Recognises and identifies the implications of organisational policies and procedures when planning and undertaking work
Teamwork	• Identifies the requirements of important communication exchanges, selecting channels, format, tone and content according to purpose and audience
Planning and organising	• Applies formal processes when planning more complex tasks, producing plans with logically sequenced steps and reflecting some awareness of resource constraints
Technology	• Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world and uses these to troubleshoot and understand the uses and potential of new technology

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Unit Mapping Information

Supersedes and is equivalent to ICTICT501 Research and review hardware technology options for organisations.

Links

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Assessment Requirements for ICTICT518 Research and review hardware technology options for organisations

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify hardware technology improvements for an organisation on at least one occasion, including:
  - analysing and planning approaches to technical problems and management requirements
  - accessing and conveying conceptual information regarding emerging technology in relation to organisational needs
  - forecasting future needs for planning and research purposes and recommending technology options
  - documenting findings in a report and seeking and responding to feedback.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- key features of business planning processes applicable to researching technology
- client business needs that can be satisfied by the provision of information and communications technology (ICT) products and services
- current business practices for preparing reports
- current industry and technology information sources
- general features and capabilities of current industry accepted hardware, cabling and software products, and emerging trends and product design
- equipment performance benchmarking
- industry networks, key individuals and organisations within the ICT industry that influence and report on hardware technology
- information gathering techniques required when researching and reviewing hardware technology options
- quality assurance practices that promote reliable investigation processes

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- vendor product directions, including those for:
  - access and security products
  - next generation networks
  - self-configuring asymmetric digital subscriber line (ADSL) or cable modem-router-switch for the small office and home office (SOHO) market
  - wireless standards.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- network and computer layout documentation and premises plans
- network components
- equipment specifications
- organisational guidelines
- business plan or model
- journals of industry and professional associations.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT519 Develop detailed component specifications from project specifications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to analyse requirements of the project specifications in order to produce a set of high-level component specifications.

The unit applies to systems designers who are required to produce component specifications for programmers.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare components	1.1 Document behaviour scenarios according to documentation standards 1.2 Identify and develop components according to project specifications 1.3 Prepare diagrams according to required standards
2. Prepare schema	2.1 Analyse and document component connectivity 2.2 Identify and incorporate data flow iteration 2.3 Prepare component action diagrams according to required standards
3. Prepare component	3.1 Review and update functional requirements

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ELEMENT	PERFORMANCE CRITERIA
model	3.2 Specify interface components and component relationships 3.3 Prepare interaction diagrams according to standards
4. Iterate and review model	4.1 Conduct walk-through of current model and review functionality 4.2 Identify relationships and confirm integration of model 4.3 Review class service requirements 4.4 Prepare initial test criteria 4.5 Implement process for incremental testing

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Interprets and analyses text with complex terminology, diagrams, code, syntax, icons and symbols to evaluate current system functionality and technical requirements
Writing	• Uses task related terminology and a formal document structure, choosing format and style according to document audience and organisational requirements • Uses required vocabulary, terminology, labelling and naming conventions to develop diagrams using industry specific design tools
Numeracy	• Interprets numerical information and applies basic mathematical calculations relating to time durations and budgetary information
Self-management	• Identifies and follows explicit and implicit protocols and meets expectations associated with own role
Planning and organising	• Takes responsibility for planning and organising own workload, identifying ways of sequencing and combining elements for efficiency
Problem solving	• Responds intuitively to problems in familiar contexts requiring immediate attention
Technology	• Recognises and identifies purpose, needs and limitations when selecting devices and applications for different tasks

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Unit Mapping Information

Supersedes and is equivalent to ICTICT502 Develop detailed component specifications from project specifications and ICTPMG504 Prepare project specifications.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT519 Develop detailed component specifications from project specifications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop component specifications for a project on at least two occasions, including:
  - identifying and document high level component specifications relevant to the project specifications
  - analysing and document component connectivity and relationships
  - documenting and review component modelling.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- component design tools, including features and capabilities
- processes for configuration management
- key features of a cost-benefit analysis
- industry accepted design methodologies and hardware and software products, including features and capabilities
- data modelling techniques
- program development methodologies
- quality assurance practices for preparing component models
- standards and organisational policies relating to component specification development
- current system functionality for analysing components.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

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- technical specifications
- organisational and process goals
- standards for model development
- computer aided software engineering (CASE) tools
- project deliverables
- test plan
- project budget
- software and hardware required for performance evidence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT520 Confirm transition strategy for new systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to confirm a transition strategy for new systems based on a revised system design and newly developed change management plan.

The unit applies to those who work as part of a team in a range of information and communications technology (ICT) positions and who are required to plan for a transition to new system websites, networks or software.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Confirm delivery and acceptance plan	1.1 Evaluate revised system design and change management plan 1.2 Confirm phased delivery with client and project team 1.3 Confirm method of acceptance and acceptance criteria 1.4 Confirm that acceptance test plan is in place and agreed
2. Develop and confirm data take-up plan	2.1 Identify data source for each database 2.2 Analyse potential integrity constraints 2.3 Design data conversion workflow 2.4 Identify interface requirements, data take-up method, complexity and effort required 2.5 Develop required data conversion contingencies and confirm

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ELEMENT	PERFORMANCE CRITERIA
	with required personnel
3. Confirm cutover plan	3.1 Agree on conversion window in operational timescale with required personnel 3.2 Plan and confirm parallel running with required personnel 3.3 Determine and confirm approval of dependencies with required personnel 3.4 Determine and confirm approval of fall-back options with required personnel 3.5 Confirm approval of checkpoints, tests and responsibilities with required personnel 3.6 Confirm approval of resources, tasks and timescales with required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Identifies and analyses complex electronic and hard copy documentation, information and data containing specific terminology, diagrams and numerical information to organise conversion and identify data convention contingencies
Writing	• Applies formal labels, logos, formatting and document structure required by the organisation to ensure signoff obtained is valid
Oral Communication	• Articulates strategies clearly and distinctively, based on techniques and language specific to audience and environment, and uses probing, clarifying questions to ensure strategies are understood
Numeracy	• Interprets and analyses numerical and financial information and applies mathematical calculations and financial functions related to timeframe, logistics and budgets
Planning and organising	• Applies formal processes when planning more complex tasks, producing plans with logically sequenced steps and reflecting some awareness of resource constraints • Uses analytical processes in a variety of situations, setting goals, gathering relevant information and identifying and evaluating options against agreed criteria
Technology	• Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital

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SKILL	DESCRIPTION
	world and uses these to troubleshoot

Unit Mapping Information

Supersedes and is equivalent to ICTICT504 Confirm transition strategy for a new system.

Links

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Assessment Requirements for ICTICT520 Confirm transition strategy for new systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- confirm new systems transition strategy for an organisation on at least one occasion, including:
  - confirming acceptance plan
  - developing and confirming data take-up plan
  - confirming cutover plan.

In the course of the above the candidate must:

- identify and liaise with required personnel
- seek and respond to feedback.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- technology transition strategies
- current business practices related to transition strategies
- phased delivery requirements
- methods of acceptance for transition strategies
- key features of data take-up, including:
  - data sources
  - integrity constraints
  - data conversion workflow
  - interface requirements
  - data take-up methods
  - data conversion contingencies

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- key features of cutover plans, including:
  - conversion windows
  - dependencies
- fall-back options data conversion workflow design, including considerations for:
  - data validation
  - data clean-up
  - data loading.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- ICT specifications
- change management plan
- acceptance test plan
- system design
- ICT security assurance specifications.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT521 Select new technology supported business model

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to identify opportunities for using new technology to support and enable efficient business models.

The unit applies to senior Information and Communications Technology (ICT) staff in a range of areas who are required to research innovative approaches to meeting organisational requirements.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Evaluate current state	1.1 Map existing ICT process flow against performance standards and identify areas that may benefit from improvement 1.2 Evaluate existing business models and processes 1.3 Identify and analyse changes in technological, client and supply chain environments 1.4 Document factors identified and submit to required personnel for review
2. Research business models	2.1 Investigate alternative business models in use in similar businesses 2.2 Identify and determine relevance of business models in use

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ELEMENT	PERFORMANCE CRITERIA
	and under development in other industry sectors 2.3 Investigate and evaluate new business models 2.4 Evaluate opportunities identified against business requirements 2.5 Prioritise and document identified opportunities
3. Propose new business model	3.1 Select new business model according to organisational requirements 3.2 Develop performance benchmarks for chosen business model 3.3 Determine and model new business processes 3.4 Document proposed business model according to organisational procedures 3.5 Submit documentation to required personnel for sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Identifies, analyses and evaluates complex text, diagrams, business models and statistical and financial information
Writing	• Integrates information and ideas from a number of sources, utilising information ICT modelling tools, and specialised and cohesive language and document structures
Numeracy	• Interprets and analyses a range of statistical and financial data relating to business models to analyse the current model, identify current and future needs, and develop new technology models
Self-management	• Identifies and responds to explicit and implicit protocols in familiar work contexts • Uses systematic analytical processes in complex, non-routine situations, setting goals, gathering relevant information and identifying and evaluating options against organisational requirements
Teamwork	• Identifies the requirements of important communication exchanges, selecting appropriate channels, format, tone and content to suit purpose and audience, and monitoring impact
Technology	• Uses and investigates new digital technologies and applications to manage and manipulate data, and communicate effectively with others in a secure and stable digital environment

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Unit Mapping Information

Supersedes and is equivalent to ICTICT507 Select new technology models for business.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT521 Select new technology supported business model

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- propose a new technology supported business model for an organisation based on organisational requirements on at least one occasion, including:
  - identifying new approaches to technology use
  - determining the suggested focus of the selected business model according to identified performance improvement standards
  - documenting the new business model.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- procedures for benchmark selection and development
- key features of business process design, including:
  - case diagrams
  - business process modelling and notation
  - activity diagrams
- key components of business-to-business and business-to-customer interface and liaison
- copyright and intellectual property factors relating to selecting new technology models
- current organisational environment, including:
  - technological
  - client
  - supply chain
- methods for determining impact of technological change
- principles of electronic commerce modelling language (ECML)
- procedures for interpreting environmental scanning

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- procedures for interpreting design specifications
- key features of modelling methodology
- key components of value and supply chain management
- key features of website architecture.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- business systems
- analysis software
- modelling software
- business requirements
- current industry news
- supply and value chain analysis.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT522 Evaluate vendor products and equipment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to evaluate and test a range of vendor products and equipment against a client's organisational requirements.

The unit applies to those in a range of information and communications technology (ICT) areas who are required to assess hardware and software products.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish project parameters	1.1 Evaluate and prioritise business requirements 1.2 Identify conflicting and overlapping business requirements 1.3 Confirm budget and available resources 1.4 Validate business requirements, budget and resource needs with client
2. Identify vendor products and equipment	2.1 Investigate a representative range of vendor products and equipment 2.2 Identify and document interdependencies 2.3 Specify and document technical alternatives available to business 2.4 Determine and document availability of products and

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ELEMENT	PERFORMANCE CRITERIA
	equipment 2.5 Confirm vendor products and equipment meet Australian and other required standards
3. Test vendor products and services	3.1 Develop valid and reliable test regime 3.2 Establish test environment and calibrate measuring equipment 3.3 Undertake testing of products and equipment and document results 3.4 Undertake revised testing where initial tests are inconclusive or where alternative product configuration may meet business requirements
4. Evaluate vendor products, services and equipment	4.1 Rate vendor products for quality, performance and support 4.2 Rate vendor products for fit with client needs 4.3 Establish product limitations, performance, integration capabilities and costs, and compare with established business requirements 4.4 Prepare cost-benefit analysis
5. Prepare evaluation report	5.1 Document product information in order of preference 5.2 Produce a report specifying preferred product and provide rationale for recommendations 5.3 Submit report to client for approval

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	• Identifies, analyses and evaluates highly technical documents, diagrams, business strategies and statistical and financial information
Writing	• Integrates information and ideas from a number of sources using specialised and cohesive language and formal document structures
Numeracy	• Interprets and analyses a range of statistical and financial data relating to products, equipment and integration costs • Uses a range of software tools to apply statistical and financial functions and prepare a cost-benefit analysis
Self-management	• Identifies the legal and regulatory responsibilities related to own work and recognises some legal principles across work contexts

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Skill	Description
Teamwork	• Identifies the requirements of important communication exchanges, selecting channels, format, tone and content according to purpose and audience
Planning and organising	• Develops plans to manage relatively complex non-routine tasks and demonstrates an understanding of how they may contribute to longer term operational and strategic goals • Uses systematic, analytical processes in complex non-routine situations, setting goals, gathering relevant information and identifying and evaluating options against agreed criteria

Unit Mapping Information

Supersedes and is equivalent to ICTICT508 Evaluate vendor products and equipment.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT522 Evaluate vendor products and equipment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- determine vendor products and equipment options for an organisation according to requirements on at least one occasion, including:
  - evaluating a range of vendor products and equipment against requirements
  - testing all identified product options
  - documenting the selected items and selection rationale in a report.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- relevance and application of the following for evaluating and selecting products:
  - code of ethics
  - international standards
  - vendor products
  - client business domain
  - copyright and intellectual property
  - general features and capabilities of current industry accepted hardware and software products
- current and future technical systems considerations required by business
- features and functions of relevant hardware components and software products and the interaction between them
- measures required for test regimes.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- client functional requirements
- hardware and software specifications from vendors
- test procedures and activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT523 Gather data to identify business requirements

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to identify, analyse and document business requirements.

The unit applies to systems analyst developers and project team leaders and managers who are responsible for gathering data to identify business requirements.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify information sources	1.1 Determine information required according to project requirements 1.2 Evaluate available information against project requirements 1.3 Identify addition information sources based on evaluation of information 1.4 Develop critical questions to elicit information from key stakeholders using a mixture of open and closed questions
2. Gather data	2.1 Review current organisational documentation and identify data required for project 2.1 Use a wide range of information gathering techniques according to project requirements 2.2 Review reports and other data sources for business

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ELEMENT	PERFORMANCE CRITERIA
	information 2.3 Confirm with stakeholders business critical factors relating to current and future directions of organisation
3. Prepare data analysis for review	3.1 Analyse group and individual responses to clearly define business priorities 3.2 Document data analysis for review according to organisational standards

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

• Skill	Description
Reading	• Identifies, analyses, evaluates and applies complex online and hard copy documentation containing specific terminology, diagrams and numerical information to identify business requirements
Writing	• Uses plain English and appropriate questioning strategies, avoiding loaded or leading questions, when developing information gathering documentation • Uses vocabulary, grammatical structures, terminology, diagrams, numerical information, formatting and structure relevant to the job role and organisation to document the analysis
Oral Communication	• Articulates research and resource requirements clearly and directs discussions to elicit the views and opinions of others by using effective listening and open questioning techniques
Numeracy	• Interprets numerical information and applies mathematical calculations and financial functions to analyse financial information
Self-management	• Identifies and responds to explicit and implicit protocols in familiar work contexts and articulates the importance of identifying and responding to protocols in new situations • Uses a mix of intuitive and formal processes to identify key information and issues, evaluate alternative strategies, anticipate consequences and consider implementation issues

Unit Mapping Information

Supersedes and is equivalent to ICTICT509 Gather data to identify business requirements.

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Assessment Requirements for ICTICT523 Gather data to identify business requirements

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify sources and gather information pertinent to the business requirements
- review and analyse business requirements based on business strategy and current and future directions
- confirm the business-critical factors with stakeholders
- prepare data and document data analysis for review according to organisational standards.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- features of client business domain that inform project team and client understanding of business needs
- industry accepted hardware and software products, general features and capabilities considerations when determining business functions
- role of stakeholders and degree of their involvement in the process
- quality assurance practices required when determining business requirements.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- project brief
- business documentation.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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ICTICT524 Determine ICT strategies and solutions for organisations

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to analyse Information and Communications Technology (ICT) goals, objectives and future requirements for an organisation and determine the best ICT systems solution.

The unit applies to those who administer and manage ICT support and participate in the development of strategic initiatives in small-to-medium enterprises (SMEs).

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Evaluate ICT needs of the organisation	1.1 Analyse organisation's current needs and projected ICT requirements 1.2 Review organisational environment and relevant industry changes and trends 1.3 Determine ICT goals, objectives and future requirements 1.4 Document outcomes and submit to required personnel and seek and respond to feedback
2. Determine project goals and objectives	2.1 Confirm project scope with required personnel 2.2 Evaluate organisational impact of changes

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ELEMENT	PERFORMANCE CRITERIA
	2.3 Document project, goals and impact of changes according to requirements
3. Determine best ICT systems solution	3.1 Evaluate a range of ICT systems solutions according to project goals 3.2 Define high-level hardware, software and communications environment required for proposed systems solution 3.3 Develop a feasibility study and a cost-benefit analysis for proposed solution 3.4 Confirm that proposed solution aligns with organisation's strategic plan 3.5 Submit feasibility study and cost-benefit analysis document to required personnel for approval and sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	• Identifies, interprets and evaluates a wide range of organisational documentation, financial and statistical data, and technical documentation containing complex terminology and diagrams
Writing	• Uses ICT specific terminology and structures document according to documentation purpose
Numeracy	• Interprets and analyses a range of statistical and financial data relating to products, equipment and integration costs • Uses a range of software tools to apply statistical and financial functions and prepare a cost-benefit analysis
Self-management	• Takes responsibility for high-impact decisions in complex situations involving many variables and constraints
Teamwork	• Identifies the requirements of important communication exchanges, selecting channels, format, tone and content according to purpose and audience
Planning and organising	• Uses a combination of formal and logical planning processes and an increasingly intuitive understanding of context to evaluate cost benefits and appropriate solutions
Technology	• Recognises and identifies the strategic and operational potential of digital trends to achieve work goals, enhance work processes, create opportunities and reduce risks

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Unit Mapping Information

Supersedes and is equivalent to ICTICT510 Determine appropriate ICT strategies and solutions.

Links

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Assessment Requirements for ICTICT524 Determine ICT strategies and solutions for organisations

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- determine Information and Communications Technology (ICT) systems solutions for an organisation according to client requirements on at least one occasion, including:
  - analysing the organisation's current needs and projected ICT requirements
  - determining the impact of system changes on the organisation
  - evaluating and recommending ICT strategies and systems solutions to meet business objectives
  - developing a feasibility study and cost-benefit analysis of proposed solution
  - seeking and responding to feedback throughout the process.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- current industry systems development methodologies
- business planning process relevant to developing an ICT business solution
- current business practices for:
  - preparing business reports
  - facilitation of group interviews
- quality assurance practices for ICT solutions
- general features and capabilities of current industry accepted hardware and software products
- key components of feasibility studies and cost-benefit analyses in relation to ICT strategies and solutions
- information sources for a cost-benefit analysis
- role and degree of stakeholder involvement in developing ICT strategy
- specific client business requirements in relation to proposed ICT solutions.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- detailed information relating to current needs and project requirements of the business
- client expectations brief
- business risks and objectives.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT525 Identify and manage the implementation of industry specific technologies

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to identify, plan and manage the implementation of industry specific technologies at an identified industry standard.

The unit applies to those engaged in ongoing review and research to identify, manage and evaluate the implementation of industry technologies or techniques to improve aspects of the organisation's activities.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Analyse and plan implementation of industry specific technologies	1.1 Identify technologies specific to industry sector 1.2 Evaluate relevance of industry specific technologies to organisational requirements 1.3 Plan implementation of industry specific technologies to meet organisational requirements
2. Manage application of industry specific technology	2.1 Coordinate testing of industry specific technology 2.2 Implement specific features and functions of industry specific technology to provide a suitable solution to an identified problem 2.3 Access and use sources of information relating to

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ELEMENT	PERFORMANCE CRITERIA
	industry specific technology
3. Review, analyse and evaluate industry specific technology performance	3.1 Analyse implementation of industry specific technology for performance and usability 3.2 Review and evaluate benefits of implemented technology to organisation 3.3 Determine environmental considerations involved with the use of new technology 3.4 Seek feedback from users where appropriate

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	• Identifies and interprets technical online and hard copy documentation containing complex terminology and diagrams to identify industry specific technologies that will benefit the organisation
Writing	• Uses vocabulary, grammatical structures and terminology and document structure relevant to the job role and organisation • Uses questioning strategies, when developing feedback gathering documentation
Oral Communication	• Uses listening and questioning techniques for seeking and responding to feedback
Self-management	• Identifies legislation and regulations relevant to own rights and responsibilities and demonstrates understanding of the implications of these when planning work • Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information and identifying and evaluating options against agreed criteria
Planning and organising	• Develops plans to manage relatively complex, non-routine tasks with an awareness of how they may contribute to longer term operational and strategic goals
Technology	• Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world and uses these to troubleshoot and understand the uses and potential of new technology

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Unit Mapping Information

Supersedes and is equivalent to ICTICT514 Identify and manage the implementation of current industry specific technologies.

Links

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Assessment Requirements for ICTICT525 Identify and manage the implementation of industry specific technologies

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- implement industry specific technology for an organisation, according to organisational requirements, on at least one occasion, including:
  - analysing and critically evaluating the features and functions of identified industry specific technologies to an industry standard
  - managing the implementation process of new and emerging industry specific technology
  - reviewing the performance of the industry specific technologies for the organisation.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- trends and applications of current vendor products and technologies
- techniques for gathering information to assist in identifying and managing implementation of industry specific technologies
- current directions of information and communications technology (ICT) and specifically of the major industry technology standards used in the specified area
- general features, capabilities and application of current industry hardware and software products.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- industry specific technologies currently used in industry

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- documents detailing organisational requirements.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTICT526 Verify client business requirements

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to deal with clients at a senior level, to identify their business requirements and verify the accuracy of the information gathered.

The unit applies to senior Information and Communications Technology (ICT) personnel operating with a high degree of autonomy for managing activities.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish business relationship	1.1 Identify organisational structure, culture and politics in relation to support requirements 1.2 Identify internal and external organisational stakeholders 1.3 Develop business relationship with client 1.4 Schedule regular liaisons with client to manage relationship
2. Determine context of business need or problem	2.1 Work with client to define business problem to be investigated 2.2 Establish system boundaries and scope according to business requirements 2.3 Manage preparation of required information

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ELEMENT	PERFORMANCE CRITERIA
	gathering 2.4 Confirm that project objectives and outcomes are documented 2.5 Work with client to substantiate documentation
3. Source and analyse information	3.1 Supervise information gathering from identified clients of system 3.2 Analyse gathered client responses according to business information needs 3.3 Analyse new system requirements according to business information needs 3.4 Confirm that new system requirements and problems have been documented
4. Confirm system specifications	4.1 Review system specifications documentation with client 4.2 Work with client to verify system specifications, updating documentation as required 4.3 Obtain final approval and sign-off from client

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	• Identifies, analyses and evaluates complex and technical online and hard copy documentation containing specific terminology, diagrams and numerical information to identify organisational requirements, analyse business problems and identify solutions
Writing	• Uses questioning strategies, avoiding loaded or leading questions, when developing information gathering documentation • Uses grammatical structures and terminology, diagrams and flow charts, numerical information, and formatting and document structure relevant to the job role and organisation to record new system requirements and associated risks
Oral Communication	• Participates in a verbal exchange of ideas and solutions and uses detailed and clear language to clarify and present information according to requirements and audience
Numeracy	• Interprets numerical information and applies mathematical calculations relating to time durations and budgetary information
Planning and	• Uses a combination of formal and logical planning processes and an

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Skill	Description
organising	increasingly intuitive understanding of context to evaluate appropriate solutions
Self-management	• Takes responsibility for high-impact decisions in complex situations involving many variables and constraints
Technology	• Recognises and identifies the strategic and operational potential of digital trends to achieve work goals, enhance work processes, create opportunities and reduce risks

Unit Mapping Information

Supersedes and is equivalent to ICTICT515 Verify client business requirements.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT526 Verify client business requirements

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- verify project specific information for a client on at least one occasion, including:
  - establishing business relationships through investigation of the organisation and interviews with client and staff
  - determining and documenting business expectations and needs, including critical business requirements
  - working with clients and staff to gather, analyse and confirm information contributions
  - reviewing and gaining approval for system specifications.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- process for communicating with client in order to gather and report data
- client business requirements relating to Information and Communications Technology (ICT) product selection
- process used to identify products related to the business
- roles and responsibilities of stakeholders.

Assessment Conditions

conditions are typical of those in a working environment in this industry.

This includes access to:

- client expectations brief
- business objectives
- systems, data gathering and appropriate software products.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTICT527 Develop and maintain blockchain solutions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to identify, develop and maintain blockchain solutions to specified business needs.

It applies to those in roles, including senior software developers or blockchain developers, who perform the planning, development and implementation of new and existing technologies to business models in the Information and Communications Technology (ICT) and related industries.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine blockchain solution requirements	1.1 Establish blockchain objectives, purpose and requirements according to organisational needs 1.2 Identify organisational processes and transactional types suitable for blockchain technology 1.3 Identify organisational use-case according to organisational needs 1.4 Determine legislation and organisational policies and procedures for blockchain and determine impact on solution
2. Design blockchain solution components	2.1 Gather data according to organisational needs 2.2 Design integration workflow according to organisational

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	need 2.3 Determine security and platform for blockchain solution 2.4 Document design plan according to organisational needs
3. Implement blockchain solution	3.1 Set up required platform according to design plan 3.2 Initialise blockchain solution according to vendor specifications 3.3 Implement required consensus portal 3.4 Execute smart command in required platform according to blockchain solution 3.5 Debug and scale blockchain solution
4. Maintain blockchain solution	4.1 Test performance against organisational needs and requirements 4.2 Determine and conduct maintenance tests 4.3 Determine and document maintenance schedule 4.4 Submit documentation to required personnel and seek and respond to feedback

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Monitors outcomes of decisions, considering results and identifying key concepts and principles that may be adaptable in the future
Numeracy	• Uses mathematical formulae to calculate required equipment, undertake measurements and determine response times
Oral communication	• Obtains information to confirm requirements and responsibilities distinctively using appropriate industry language
Reading	• Recognises and interprets technical, manufacturer and organisational documentation to determine and confirm job requirements
Writing	• Prepares documentation outlining maintenance schedule according to specified requirements
Planning and organising	• Operates from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation, and identifying and addressing issues
Problem solving	• Uses nuanced understanding of context to recognise anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise

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SKILL	DESCRIPTION
Self-management	• Takes full responsibility for identifying and considering relevant organisational protocols and requirements • Uses systematic processes, setting goals, gathering required information and identifying and evaluating options against agreed criteria
Technology	• Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT527 Develop and maintain blockchain solutions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop, implement and maintain a blockchain solution aligned to a specific organisational criterion.

In the course of the above, the candidate must:

- research and identify industry standard technology options.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- underlying blockchain principles applicable to developing and maintaining solutions
- objectives, purpose and requirements of blockchain solutions
- suitability of blockchain different transaction and data types
- transactional types and components suitable for blockchain technology
- techniques to debug, scale and test blockchain solutions
- capabilities and purpose of blockchain technology
- industry standard uses for applications.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- industry standard software to access internet and web delivered information
- industry standard hardware to access internet and web delivered information

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- client deliverables that assist in information gathering
- platforms providing distributed ledger applications
- blockchain best practice guidelines.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT528 Deploy smart contracts

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to administer and manage smart contracts as a blockchain application. It involves the research, planning and deployment of blockchain applications for smart contracts suitable to specified business need.

It applies to those who work as senior software developers, blockchain developers, or those who are responsible for undertaking the assessment and implementation of new technologies to business models in the Information and Communications Technology (ICT) and related industries.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to deploy blockchain technology	1.1 Establish organisational requirements for blockchain technology and contracts 1.2 Determine existing blockchain infrastructure 1.3 Identify data based on existing infrastructure and organisational requirements 1.4 Determine platform and security requirements
2. Plan deployment strategy	2.1 Determine and document deployment plan according to organisational requirements 2.2 Determine and document deployment timelines

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	2.3 Determine and document impact on organisational operations
3. Implement smart contracts technology	3.1 Deploy technology according to deployment plan 3.2 Determine alignment of technological capabilities against deployment plan 3.3 Determine and apply methods to align smart contract capability against deployment plan 3.4 Create documentation and seek and respond to feedback from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Monitors outcomes of decisions, considering results and identifying key concepts and principles that may be adaptable in the future
Numeracy	• Uses mathematical formulae to calculate required equipment, undertake measurements and determine response times
Oral communication	• Obtains information to articulate requirements and responsibilities distinctively using appropriate industry language intended for audience and environment
Reading	• Recognises and interprets technical, manufacturer and organisational documentation to determine and confirm job requirements
Writing	• Prepares documentation detailing deployment plan, timelines and impact on organisational operations using appropriate language for intended audience
Planning and organising	• Operates from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation, and identifying and addressing issues
Problem solving	• Uses nuanced understanding of context to recognise anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise
Self-management	• Takes full responsibility for identifying and considering relevant organisational protocols and requirements • Uses systematic processes, setting goals, gathering required information and identifying and evaluating options against agreed criteria
Technology	• Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world

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Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT528 Deploy smart contracts

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- deploy a smart contract using blockchain technology on at least two occasions.

In the course of the above, the candidate must:

- research organisational business model and determine required distributed ledger application
- demonstrate adherence to blockchain best practices and guidelines.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- objectives, purpose and requirements of blockchain solutions
- blockchain principles that apply to deploying smart contracts
- functions and features of cryptography
- database rules relevant to deploying smart contracts
- transactional components
- industry standard uses for applications
- industry standard uses for ABI and bytecode variables
- uses and functions of Integrated Development Environment (IDE)
- libraries and languages relevant to deploying smart contracts
- security best practices and principles applicable to smart contracts.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

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- industry standard software to access internet and web delivered information
- industry standard hardware to access internet and web delivered information
- client deliverables that assist in information gathering
- platforms providing distributed ledger applications
- blockchain best practice guidelines.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT529 Organise and lead agile projects

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to lead and organise an agile team of Information and Communications Technology (ICT) and other industry professionals to deliver a project within an agile project management framework.

The unit applies to those in 'scrum master' roles and those responsible for leading team members within an agile project. This includes working as project leads within software, web, application and game development environments, without the function of client negotiation or overall business management of the project.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish agile project and team	1.1 Identify and confirm project requirements, outcomes and client expectations with required personnel 1.2 Confirm agile project management methodology and timelines according to project requirements 1.3 Consolidate and confirm prioritisation of tasks according to project timelines 1.4 Confirm project scope, budget and key dates with required personnel 1.5 Negotiate and facilitate team members choosing roles and

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ELEMENT	PERFORMANCE CRITERIA
	responsibilities with required personnel
2. Coordinate effective team communication	2.1 Discuss, confirm and implement ways and forms of communicating through tools and meetings with required personnel 2.2 Facilitate and manage agile meeting and encourage others to share feedback and progress 2.3 Check alignment of tasks, progress and timelines match communication and meeting agendas 2.4 Manage work progress and update communication tools according to project progress
3. Prioritise and manage backlog	3.1 Identify and prioritise work backlog according to client requirements 3.2 Determine increment timelines and stages of incremental delivery according to project requirements 3.3 Select range of backlog items to work on in first sprint 3.4 Communicate and coach team to self-select backlog streams and confirm with required personnel 3.5 Manage project work and track progress against project requirements 3.6 Coach and seek feedback from team members 3.7 Raise and action feedback outcomes according to project requirements and personnel feedback 3.8 Re-prioritise deliverables and backlog for next sprint according to client requirements
4. Finalise agile project	4.1 Collate project deliverables and prepare to present to client according to project requirements 4.2 Review and discuss project outcomes, agile effectiveness and team performance with required personnel 4.3 Lead agile project debrief and document outcomes and lessons learnt

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Uses a wide range of mathematical calculations to interpret numerical information and to prepare/reconcile financial data

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SKILL	DESCRIPTION
Oral communication	• Actively listens and contributes to discussions to confirm requirements and discusses solutions to identified problems • Applies coaching techniques to encourage and support team members to achieve potential in team environment
Reading	• Interprets complex text in order to address the project requirements
Writing	• Prepares complex documents using required language and grammar to present ideas, options and recommendations in a logical sequence
Teamwork	• Fosters a collaborative culture within own sphere of influence, facilitating a sense of commitment and cohesion, and highlighting and using the strengths of those involved when establishing the project team • Actively builds formal and informal networks to include key people/communities with expert skills and knowledge
Problem solving	• Makes a range of decisions in relatively complex situations, taking a range of constraints into account when monitoring the project and system testing • Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering required information, and identifying and evaluating options against agreed criteria when conducting post project reviews
Self-management	• Recognises and follows explicit and implicit protocols and meets expectations associated with own role and business deadlines

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT529 Organise and lead agile projects

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- plan, lead and evaluate at least three project sprints comprised of different project work tasks within an agile project framework.

In the course of the above, the candidate must:

- use at least one project management tool for effective team communication
- use at least two different agile methodologies for communicating with team members.
- coach team members and facilitate agile team culture and mindset
- discuss and agree on frequency of team communication, feedback and project progress
- apply agile principles and allow team to self-govern.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- agile principles, mindsets and behaviours
- agile methodologies, including:
  - project management
  - team member roles and responsibilities
  - characteristics of increments, increment timelines and stages of increment delivery
  - project work tools and platforms
  - communication tools and platforms
  - agile meetings, including huddles and scrums
  - KANBAN board tools
  - project debrief methodologies
  - work task prioritisation requirements and contingencies

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    - version control and progress tracking
- ICT hardware and project management software applicable to organising and managing agile projects
- communication techniques and practices required to coach others and lead meetings.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- equipment, hardware and industry software packages required for agile project work
- a range of simulated work tasks and project within agile project management teams
- project requirements and agile project team
- the internet and connectivity
- required online agile project management and communication tools.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT530 Design user experience solutions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to design solutions using a user experience (UX) methodology, with the users' experience at the centre of design. In this unit, a user refers to a customer or client who will interact and use a product, service and/or platform.

The unit applies to those working as business and systems analysts, as well as developers of software, games, websites, applications, products and services. UX design aims to improve, optimize and add value to the users' experience of a designed solution (product, service or platform).

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Explore and validate problem	1.1 Define current problem according to business needs 1.2 Research problem and alternatives in market 1.3 Set data metrics and goals, and define design success according to business needs 1.4 Research user groups and confirm groups suitable for consultation
2. Research and develop user groups' experiences	2.1 Research problem, required user group information and solutions in market

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Document research and synthesise findings 2.3 Interview user groups and document user experience findings and feedback according to user and market segmentation 2.4 Create user group personas and map to user experience problems and improvement opportunities 2.5 Develop wireframes to communicate user experience according to current problem
3. Create solution options and validate solution	3.1 Workshop and determine solutions according to user experience, problems and improvement opportunities identified 3.2 Confirm best solution with required personnel and client according to UX principals and user needs 3.3 Develop solution prototype according to confirmed solution 3.4 Test solution according to required methodology 3.5 Collect feedback from user groups and adjust solution according to UX principles and user needs 3.6 Finalise solution and document work according to organisational requirements
4. Finalise and present UX solution	4.1 Finalise and confirm UX solution 4.2 Document and collate findings and solution documentation according to organisational requirements 4.3 Present solutions to required personnel 4.4 Integrate UX design into solution according to business need

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Oral communication	• Uses listening and questioning skills to confirm requirements and participate in discussion to synthesise information from others
Reading	• Critically analyses documentation, information and data from a variety of sources and records, and consolidates information to determine requirements, meaning and applicability to task
Writing	• Prepares complex documents using required language and grammar to present ideas, options and recommendations in a logical sequence

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SKILL	DESCRIPTION
Teamwork	• Builds formal and informal networks to include key people/communities with expert skills and knowledge • Coordinates team effectiveness by including, coaching, informing and coordinating others
Problem solving	• Makes complex decisions in varied situations, taking a range of constraints into account when monitoring the project and design process
Self-management	• Monitors progress of plans and schedules, and reviews and changes them to meet new demands and priorities • Investigates new and innovative ideas and work practices through consultation, formal and analytical thinking
Technology	• Interprets the purposes, specific functions and key features of technologies and operates them effectively to complete design exercises and identify how others use technologies

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT530 Design user experience solutions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design and document at least one user experience (UX) solution for a user group of at least 3 people.

In the course of the above, the candidate must:

- undertake research and consultation
- test, adjust and improve solution to desired outcome.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- consultation and communication techniques and methodologies applicable to designing user experience solutions
- UX principles and values, including usefulness, aesthetics, desirability, useability and function
- UX methodologies and techniques, including:
  - design thinking
  - use-mapping and journey exercises
  - market segmentation
  - testing solution on user groups
  - testing function and useability
  - validating user experience of solution.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- wireframe and prototype tools and templates
- design problem or business case
- user group of at least three different people.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT532 Apply IP, ethics and privacy in ICT environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to maintain professional and ethical conduct, as well as to ensure that personal information of stakeholders is handled in a confidential and professional manner when dealing with stakeholders in an Information and Communications Technology (ICT) environment.

It applies to ICT personnel who are required to gather information to determine the organisation's code of ethics and protect and maintain privacy policies and system security.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish organisational IP requirements	1.1 Identify industry standard intellectual property (IP) and copyright legislation, policies and procedures 1.2 Identify and document organisational policy and industry standard legislation against organisational work practices 1.3 Distribute new or revised policy and procedures to stakeholders according to organisational procedures
2. Review and determine organisational IP, ethics and privacy policies	2.1 Review organisational privacy policy and procedures and determine compliance with industry standard requirements

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Review organisational code of ethics and determine compliance with industry standard requirements 2.3 Review ethical work practices and feedback and determine application of code according to organisational requirements
3. Contribute to privacy policy	3.1 Update privacy policy and procedures and code of ethics to align with required privacy legislation 3.2 Distribute revised policy, procedures and ethics to required personnel 3.3 Implement new work procedures and ethics according to organisational requirements 3.4 Test level of integrity, confidentiality, security and availability of information according to industry standards and organisational policies and procedures
4. Maintain ethics code	4.1 Establish and document review and grievance procedures and submit to required personnel 4.2 Seek and respond to review and grievance procedure documents feedback from required personnel 4.3 Obtain final sign-off from required personnel

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Learning	• Uses each experience to reflect on ways in which variables impact on decision outcomes and to gain insights into what constitutes decision making in different contexts
Oral communication	• Participates in verbal exchange of ideas and elicits views and opinions of others using listening and questioning techniques • Identifies requirements of important communication exchanges, selecting channels, format, tone and content to suit purpose and audience
Reading	• Analyses and evaluates complex text to determine legislative and organisational standards, and applies information to organisational policies and processes
Writing	• Integrates information and ideas from a range of sources, utilising support materials and specialised and cohesive language in a format and style applicable to audience and organisation

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SKILL	DESCRIPTION
Planning and organising	• Sequences and schedules complex activities, monitors implementation and manages communication
Self-management	• Identifies and analyses changes to legislation and regulations applicable to own rights and responsibilities • Identifies implications of changes to legislation and regulations applicable to own rights and responsibilities when negotiating, planning and undertaking work
Technology	• Uses digital technologies and systems safely, legally and ethically when gathering, storing, accessing and sharing information, with a growing awareness of the permanence and transparency of all activities

Unit Mapping Information

Supersedes and is not equivalent to ICTICT418 Contribute to copyright, ethics and privacy in an ICT environment.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT532 Apply IP, ethics and privacy in ICT environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- analyse legislation and standards, and contribute to policy and procedures improvements in code of ethics and privacy policy documents in the Information and Communications Technology (ICT) industry on at least once occasion.

In the course of the above, the candidate must:

- document and communicate updates with relevant personnel.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- codes of ethics pertinent to ICT industry
- federal, state and territory legislation and policies applicable to ICT environments and relating to:
  - copyright and intellectual property
  - privacy
- organisational communication processes and procedures related to applying IP, ethics and privacy policies in ICT environments.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- industry standard organisational policies, legislation and standards documentation
- organisational style guide

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- records and documentation that assists in determination of workplace adherence to organisational code of ethics
- industry codes of practice
- hardware and software applicable to applying legislative and organisational policies.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT611 Develop ICT strategic business plans

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to create strategic in alignment with organisational Information and Communications Technology (ICT) goals and strategies.

It applies to those who work as senior ICT professionals, across various ICT specialisms and are required to develop strategies and action plans for implementation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Develop and share mission and vision statement	1.1 Review organisation's mission statement 1.2 Develop and document organisation's vision statement 1.3 Submit documentation to required personnel and seek and respond to feedback 1.4 Communicate mission and vision statements to required personnel
2. Assess organisational environment	2.1 Evaluate and document organisation's internal environment 2.2 Evaluate organisation's external environment and document findings 2.3 Determine and document trends, developments and

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ELEMENT	PERFORMANCE CRITERIA
	critical issues impacting the organisation
3. Set objectives and targets	3.1 Develop and document organisation's objectives and targets 3.2 Develop and document strategies that meet organisational objectives, mission and values 3.3 Determine and document strategy and objective constraints
4. Finalise strategic plan	4.1 Submit all documentation and request feedback 4.2 Incorporate required changes and improvements 4.3 Obtain final task sign off from required personnel

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Description
Numeracy	• Uses a range of statistical, mathematical and financial calculations and functions to interpret numerical data relating to SWOT analysis and time and financial constraints
Oral communication	• Uses listening, probing and open questioning techniques to clarify and present information according to requirements and audience
Reading	• Identifies, analyses and evaluates complex text, diagrams, business models, industry trends, statistical information and financial information
Writing	• Integrates information and ideas from different sources, utilising appropriate strategic planning tools, specialised and cohesive language and formal document structures
Initiative and enterprise	• Identifies the strategic and operational potential of digital trends to achieve work goals, enhance work processes, create opportunities and reduce risks
Problem solving	• Identifies a range of factors that impact on a decision, including own values and principles, the needs, power, values, beliefs and assumptions of stakeholders • Recognises problem areas and identifies possible solutions
Self-management	• Takes a lead role in the development of organisational goals, roles and responsibilities • Identifies importance of clarifying, focusing and aligning goals

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Skill	Description
	and expectations, and develops ownership of and broad commitment to achieving outcomes • Develops and implements strategies that ensure organisational policies, procedures and regulatory requirements are being met

Unit Mapping Information

Supersedes and is equivalent to ICTICT601 Develop ICT strategic and action plans.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT611 Develop ICT strategic business plans

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- document plan, processes and outcomes and incorporate changes on at least one occasion.

In the course of the above, the candidate must:

- develop, review and contribute to business vision statements and strategic plans.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- analysis and planning approaches to technical problems and management requirements relating to network ICT security guidelines of the organisation
- SWOT analysis methodology
- an organisation’s approach to:
  - monitoring strategic directions
  - setting objectives and targets
  - selecting hardware platform
- evaluation methods used when forecasting for planning, including:
  - system functionality, including ICT trends and developments
  - internal and external operating environments
  - operating systems supported by the organisation.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

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This includes access to:

- budget and time constraints
- business objectives
- business risks.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT612 Develop contracts and manage contract performance

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to negotiate and document contractual arrangements between clients and vendors and to monitor and manage performance against agreed contractual obligations.

The unit applies to those in senior Information and Communications Technology (ICT) management roles who are required to contract both staff and suppliers.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish contract	1.1 Determine and document boundaries of the contract according to organisational requirements 1.2 Determine and document contract requirements according to organisational requirements 1.3 Determine and document required performance criteria 1.4 Obtain client and vendor feedback to clarify problems
2.Monitor performance and facilitate negotiations	2.1 Confirm implementation of contractual obligations 2.2 Confirm and document performance against required performance criteria and contractual

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ELEMENT	PERFORMANCE CRITERIA
	obligations 2.3 Facilitate negotiations to resolve problems and misunderstandings
3. Conclude performance outcomes and recommendations	3.1 Determine and document organisational alignment to documented performance 3.2 Determine and document unsatisfactory performance 3.3 Determine and document recommendations for contractual variations 3.4 Submit document to required personnel and seek and respond to feedback

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Numeracy	• Draws from a range of mathematical and financial calculations to determine and monitor contractual milestones, costs and budgetary constraints
Oral communication	• Demonstrates use of listening and probing and open questioning techniques to elicit the views and opinions of others and obtain information and feedback
Reading	• Analyses a variety of organisational documentation, vendor and client information, technical specifications and financial data
Writing	• Integrates information and requirements from a number of sources using correct spelling and grammar, specialised and cohesive language and formal contract documentation structures
Teamwork	• Demonstrates active identification of the requirements of important communication exchanges, selecting appropriate channels, format, tone and content to suit purpose and audience
Planning and organising	• Develops plans to manage relatively complex, non-routine tasks with an awareness of how they may contribute to longer term operational and strategic goals
Problem solving	• Demonstrates an understanding of context to identify anomalies and subtle deviations to normal expectations, focussing attention on critical issues and variables and filtering out peripheral issues
Technology	• Recognises and identifies strategic and operational potential of digital trends to achieve work goals, enhance work processes,

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Skill	Description
	create opportunities and reduce risks

Unit Mapping Information

Supersedes and is equivalent to ICTICT602 Develop contracts and manage contracted performance.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT612 Develop contracts and manage contract performance

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- negotiate and formulate at least one contract.

In the course of the above, the candidate must:

- document processes and outcomes
- monitor performance outcomes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard analysis and planning approaches to technical problems and management requirements including:
  - organisational values
  - purpose in context of formulating contracts
- methods for evaluating and forecasting vendor and technology trends
- contracting requirements related to Information and Communications Technology (ICT)
- methods of purchasing ICT equipment and services, such as negotiating extensive organisational support contracts
- industry standards in relation to service and product agreements.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

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- organisational policies and procedures
- industry standard service and product agreements
- detailed information relating to business strategic plan and objectives.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT613 Manage the use of development methodologies

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to evaluate and determine required traditional and non-traditional systems development methodologies for use by a team.

The unit applies to those in senior Information and Communications Technology (ICT) management roles who are required to manage development teams.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine appropriate development methodology	1.1 Determine, document and define subject activity 1.2 Define and document selection of development methodology criteria 1.3 Evaluate industry standard traditional and non-traditional system development methodologies 1.4 Determine system development methodology according to organisational requirements 1.5 Submit documentation to required personnel and seek and respond to feedback
2. Review development methodology	2.1 Review project plan and determine suitability to guide developmental processes and adjust according 2.2 Review identification and description of required task

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ELEMENT	PERFORMANCE CRITERIA
	types and adjust according to development methodology 2.3 Review definition of appropriate control structures that need to be created during task type execution 2.4 Review identification of resources to support methodology selection
3. Direct development methodology use	3.1 Monitor application of required methodology to solve tasks 3.2 Monitor the project flow and effectiveness of use of methodology against project plan 3.3 Review documented opportunities for improvement, lessons learned and recommendations for future projects

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Oral communication	• Uses specific and complex systems development terminology to liaise with project leader, review methodology and monitor the project
Reading	• Identifies, analyses and evaluates a range of online and hard copy organisational documentation and technical information containing complex, systems development specific terminology, syntax and diagrams and applies the information to the task
Writing	• Uses correct spelling, grammar and plain English together with a range of systems development specific terminology and computer-generated diagrams
Planning and organising	• Develops plans to manage relatively complex, non-routine tasks with an awareness of how they may contribute to longer term operational and strategic goals • Uses systematic analytical processes in complex, non-routine situations, setting goals, gathering relevant information and identifying and evaluating options against agreed criteria
Problem solving	• Identifies relevant information and ideas from a range of messages and oral and written exchanges, paying some attention to the meanings attached to the choice of form, channel and wording

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Unit Mapping Information

Supersedes and is equivalent to ICTICT603 Manage the use of appropriate development methodologies.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT613 Manage the use of development methodologies

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- evaluate and apply at least three different development methodologies and their application to a development project.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- organisational business domain and organisational requirements
- life cycle maintenance of a live system, network or website applicable to managing the use of appropriate development methodologies
- technology requirements involved for a range of development methodologies relating to managing the use of appropriate development methodologies
- industry standard development methodologies applicable to managing the use of appropriate development methodologies.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- design specifications and development methodologies
- organisational standards for documentation and version control
- detailed user requirements document, including model and scope
- a project plan.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT614 Identify and implement business innovation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to analyse traditional business processes to identify and implement business opportunities for innovation and reform.

The unit applies to those in senior Information and Communications Technology (ICT) in areas of knowledge management and systems development, who are responsible for analysing, identifying and coordinating ICT business solutions.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Compare business with competitor businesses	1.1 Identify information on business markets, customers and methods of doing business 1.2 Analyse market for business and customer base 1.3 Analyse business relationships, processes and methods of doing business with e-facilitated businesses
2. Identify business opportunities	2.1 Identify organisational innovation and reform strategies 2.2 Determine strategy compatibility against organisational goals and objectives and conduct a cost-benefit analysis according to organisational requirements 2.3 Evaluate degree of likely change and organisational ramifications according to task requirements

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ELEMENT	PERFORMANCE CRITERIA
	2.4 Conduct risk management analysis and formulate a contingency plan according to organisational requirements 2.5 Determine future proofed innovation strategies according to organisational requirements
3. Implement innovation	3.1 Redesign innovation for organisation and implement online technologies according to organisational strategy requirements 3.2 Integrate innovation according to organisational requirements 3.3 Review organisational innovation against organisational requirements outcomes 3.4 Determine organisational innovation requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Numeracy	• Uses a range of statistical, mathematical and financial calculations and functions to interpret numerical data relating to cost-benefit analysis, risk, time constraints and to monitor implementation of the reform
Reading	• Analyses and evaluates complex textual information to obtain information relevant to the organisation and the development of the innovative reforms
Writing	• Integrates information and ideas from a number of sources, utilising appropriate strategic planning and business innovation tools, specialised and cohesive language and formal document structures to meet the varied requirements of the organisation and the stakeholders
Planning and organising	• Operates from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation, and identifying and addressing issues
Problem solving	• Analysis, lateral thinking, experience and knowledge to address complex problems • Demonstrates an understanding of the ways in which variables impact on decision outcomes • Demonstrates an understanding of the strategic and operational potential of digital trends to achieve work goals, enhance work processes, create opportunities and enhance or reduce risks

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Skill	Description
Self-management	• Responds to both implicit and explicit protocols within familiar work contexts and demonstrates an understanding of the importance of identifying and responding to protocols in new situations

Unit Mapping Information

Supersedes and is equivalent to ICTICT604 Identify and implement business innovation.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT614 Identify and implement business innovation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- define, develop and implement a complex innovation plan.

In the course of the above, the candidate must:

- define the organisation's strategic directions
- develop innovations to assist the business
- produce a cost-benefit analysis of suggested innovations.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- organisation's culture and traditional organisational models
- internal and external sources of information relating to identifying and implementing business innovation
- legal, ethical and security issues relating to business strategies
- records management principles and processes
- legislation from levels of government that effect business operation.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- organisational documents including mission statements and strategic directions
- an environment where business opportunities for innovation may be implemented.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTICT615 Implement knowledge management strategies

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to implement, monitor and review knowledge management strategies.

The unit applies to those in senior Information and Communications Technology (ICT) roles including knowledge management and systems development teams.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Implement knowledge management system and procedures	1.1 Determine formal and informal incentives and reward policy for information knowledge sharing 1.2 Implement knowledge sharing policy according to organisational needs 1.3 Determine methods of contributing to the organisation’s knowledge management system 1.4 Determine user support strategies 1.5 Determine knowledge and information protection and security access levels
2. Maintain business knowledge base	2.1 Test input procedures and align to organisational needs 2.2 Collect and analyse data and align to organisational

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ELEMENT	PERFORMANCE CRITERIA
	needs 2.3 Implement contingency measures and address non-aligned procedures and incorrect data capture
3. Review knowledge management system	3.1 Evaluate knowledge management system procedures against organisational requirements 3.2 Review organisational knowledge content for accuracy and currency 3.3 Determine and document required system improvements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Learning	• Demonstrates an understanding the critical importance of the ongoing exploration of new ideas to the viability and effectiveness of a work situation • Uses each experience to reflect on the ways in which variables impact on decision outcomes
Numeracy	• Uses a range of statistical, mathematical and financial calculations and functions, and relevant software tools to interpret data, review knowledge bank efficiency and develop a cost-benefit analysis
Reading	• Critically evaluates a wide variety of textual information to ensure current accuracy of knowledge bank
Writing	• Integrates information and ideas from a number of sources using clear, logical document structures, relevant terminology and correct grammatical structures
Teamwork	• Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective group interaction, influencing direction and taking leadership role on occasion
Planning and organising	• Operate from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation, identifying and addressing issues
Problem solving	• Demonstrates an understanding of the strategic and operational potential of digital trends to achieve work goals, enhance work processes, create opportunities and enhance or reduce risks • May intuitively hone in on problem areas and identify a small set

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Skill	Description
	of possible appropriate solutions • Makes a range of critical and non-critical decisions in relatively complex situations, taking a range of constraints into account
Self-management	• Responds to both explicit and implicit protocols within familiar work contexts and demonstrates an understanding of the importance of identifying and responding to workplace policies and procedures

Unit Mapping Information

Supersedes and is equivalent to ICTICT605 Implement a knowledge management strategy.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT615 Implement knowledge management strategies

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop and implement a complex knowledge management system.

In the course of the above, the candidate must:

- review and improve systems and procedures.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- knowledge management uses, systems and structures in a contemporary organisation
- database design concepts that apply to management knowledge
- methodologies to quantify internal and external sources of information
- legal, ethical and security issues relating to knowledge management
- records management principles that apply to implementing knowledge management strategies
- legislation from levels of government that effect business operation.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- organisation’s structure, goals and knowledge requirements
- organisational business plans
- existing knowledge management strategies.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTICT616 Develop communities of practice

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to identify areas that would benefit from communities of practice (CoPs) and to develop communities.

The unit applies to senior Information and Communications Technology (ICT) management professionals responsible for teams and their output.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify community of practice requirements	1.1 Develop and document organisational knowledge map 1.2 Identify existing informal communities of practice (CoPs) 1.3 Determine and document needs and benefit of CoPs 1.4 Identify groups in disparate areas that share work goals
2. Devise spaces for involvement	2.1 Research and determine electronic meeting space according to group requirements 2.2 Search and secure shared storage in public and private areas 2.3 Enable group mailing capability 2.4 Enable other required technical facilitators

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ELEMENT	PERFORMANCE CRITERIA
3. Invite participation	3.1 Publicise and promote CoP collaborative tools according to group requirements 3.2 Host and invite required personnel to group events 3.3 Allow new groups to coalesce 3.4 Accept different levels of participation
4. Assist evolution of community	4.1 Facilitate regular contact within CoPs 4.2 Enable evolution of CoPs 4.3 Seek feedback from group participants and change CoP accordingly

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Learning	• Actively identifies, creates and utilises linkages to enhance knowledge sharing, idea creation, individual and collective engagement and work outcomes
Oral communication	• Uses the appropriate tone of voice, encouraging body language, plain English and a courteous manner when encouraging participation and facilitating CoPs
Reading	• Identifies and reviews a wide variety of text sourced from organisational documentation, electronic meeting places and the organisational knowledge bank to determine relevant and key information
Writing	• Uses persuasive writing, correct spelling, appropriate grammatical structures and a broad range of vocabulary, including idioms, colloquialisms and technical terminology, and applies document structures suitable to the document type
Teamwork	• Fosters a collaborative culture within own sphere of influence, facilitating a sense of commitment and cohesion, and highlighting and using the strengths of those involved
Planning and organising	• Takes responsibility for defining key aspects of own workload, balancing own needs and priorities with those of the work group
Problem solving	• Actively identifies systems, devices and applications with potential to meet current and future needs

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Unit Mapping Information

Supersedes and is equivalent to ICTICT606 Develop communities of practice.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT616 Develop communities of practice

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify, map and facilitate a community of practice (CoP) with more than three people.

In the course of the above, the candidate must:

- facilitate effective interaction and communicate within the group
- define purpose and intent of a CoP.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- 'communities of practice' features and purpose
- organisational structures, goals and knowledge and how they apply to CoPs
- communications enabling technologies that apply to developing communities of practice
- group dynamics and its impact on building CoPs in an organisational setting
- methodologies to promote, market and engage with CoPs and the enabling technologies.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- an organisational structure, goals and knowledge
- a site where CoP may be developed
- personnel that forms a community
- user device.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTICT617 Lead the evaluation and implementation of current industry specific technologies

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to lead the identification, management and implementation of specific industry technologies to meet identified industry standards.

The unit applies to those in senior Information and Communications Technology (ICT) leadership roles, who review and research methodologies to improve aspects of an organisation's activities.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Lead implementation of technologies	1.1 Determine specific industry technologies according to organisational and industry standards 1.2 Determine technology requirements 1.3 Plan implementation of industry specific technologies according to organisational and industry standards
2. Direct application of industry specific technologies	2.1 Lead management of industry specific technology according to organisational and industry standards testing 2.2 Direct implementation of specific features and

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ELEMENT	PERFORMANCE CRITERIA
	functions of industry specific technologies 2.3 Determine alignment of implemented technologies to organisational requirements
3. Lead review, analysis and evaluation of the technology performance	3.1 Lead analysis of the technology implementation according to organisational and industry standards 3.2 Analyse, review and evaluate benefits to organisation 3.3 Determine environmental considerations involved with using the technology

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Oral communication	• Uses clear, easy-to-understand language together with effective listening and open questioning techniques to elicit information
Reading	• Identifies and interprets technical online and hard copy documentation that will enable the organisation
Writing	• Uses vocabulary, grammatical structures, specific terminology and document structure relevant to the job role and organisation • Uses plain English and appropriate questioning strategies, avoiding loaded or leading questions, when developing feedback gathering documentation
Planning and organising	• Develops plans to manage relatively complex non-routine tasks with an awareness of how they may contribute to longer term strategic goals
Problem solving	• Makes a range of critical and non-critical decisions in relatively complex situations, taking a range of constraints into account
Self-management	• Demonstrates an understanding of the implications of legal and regulatory responsibilities related to own work, with specific reference to environmental considerations
Technology	• Demonstrates an understanding of key principles and concepts underpinning the design and operation of digital systems and tools, and applies these when troubleshooting existing technology and when seeking to understand the potential of new technology

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Unit Mapping Information

Supersedes and is equivalent to ICTICT609 Lead the evaluation and implementation of current industry specific technologies.

Links

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Assessment Requirements for ICTICT617 Lead the evaluation and implementation of current industry specific technologies

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify, document and lead a review of at least one new and established and at least one emerging technology.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard technology trends and directions in Information and Communications Technology (ICT) sector
- features and uses of industry standards relevant to new technologies
- industry standard vendor products features, functions and uses relevant to existing and new technologies
- information gathering techniques relevant to evaluating new technologies
- general features, capabilities and application of industry standard hardware and software products.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a site where industry specific technologies may be used
- industry specific technologies currently used in industry.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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ICTICT618 Manage IP, ethics and privacy in ICT environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to manage the issues of intellectual property (IP), copyright and professional and ethical conduct in a team and to ensure that personal information of stakeholders is handled in a confidential and professional manner.

The unit applies to those operating at a senior level in an organisation with a high degree of autonomy in managing policies and system security.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Manage adherence to IP regulations	1.1 Review and summarise outcomes of Australian IP and copyright law relating to Information and Communications Technology (ICT) 1.2 Determine and document alignment of Australian IP law to organisational requirements 1.3 Develop and document review plan of organisation's adherence to Australian IP law 1.4 Submit document to required personnel and seek and respond to feedback
2. Manage ethical behaviour	2.1 Review organisational and ICT specific code of ethics and summarise outcomes

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Determine and document alignment of code of ethics and conduct against organisational operations 2.3 Develop and document review plan of organisation's adherence to code of ethics and conduct 2.4 Establish review and grievance procedure and confidential reporting of ethical issues 2.5 Submit document to required personnel and seek and respond to feedback
3. Manage privacy	3.1 Determine and document regular review plan and align to required legislation and standards 3.2 Determine and document integrity, confidentiality, security and availability of information 3.3 Determine and document review plan for continued confidentiality and proprietary rights of stakeholders' interests 3.4 Submit documentation to required personnel and seek and respond to feedback 3.5 Implement new work procedures according to review plan

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Oral communication	• Participates in a verbal exchange of ideas and elicits the view and opinions of others by using effective listening and open questioning techniques
Reading	• Identifies, analyses and evaluates complex text to determine legislative requirements and organisational standards and applies the information
Writing	• Integrates information and ideas from a number of sources, utilising appropriate support materials, specialised and cohesive language and a range of writing styles and document structures
Teamwork	• Actively identifies the requirements of important communication exchanges, selecting appropriate channels, format, tone and content to suit purpose and audience, and monitoring impact
Planning and organising	• Plans strategic priorities and outcomes within a flexible, efficient and effective context in a diverse environment exposed to competing demands

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Skill	Description
	• Demonstrates an understanding of the application of key principles in a particular context, the appropriateness and effectiveness of different sources of information and planning processes for that context, and the potential implications for future situations
Problem solving	• Demonstrates a nuanced understanding of context to identify anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise
Self-management	• Takes full responsibility for identifying and considering relevant legal and regulatory obligations when managing copyright, ethics and privacy in an ICT environment • Takes a lead role in the development of organisational goals, roles and responsibilities • Monitors and reviews the organisation's policies, procedures and adherence to legislative requirements in order to implement and manage change
Technology	• Demonstrates an understanding of the broader positive and negative implications of new technologies, and acknowledges the vital importance of system security and storage management

Unit Mapping Information

Supersedes and is equivalent to ICTICT610 Manage copyright, ethics and privacy in an ICT environment.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT618 Manage IP, ethics and privacy in ICT environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- analyse legislation and standards and contribute to the review of at least three different policies including IP, ethical conduct and privacy in an organisation.

- In the course of the above, the candidate must:
- communicate policy change to required personnel.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- federal and state/territory legislation and policy relevant to an ICT environment relating to:
  - copyright and intellectual property
  - privacy
- processes and procedures by which an organisation communicates its policies and procedures
- organisational requirements for customer service relating to managing copyright, ethics and privacy in ICT environments
- industry standard ICT system security systems and procedures relating to managing IP, copyright, ethics and privacy in ICT environments.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

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- required organisational policies
- legislation and standards documentation
- industry codes of practice.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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ICTIOT501 Install IoT devices and networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to install IoT (Internet of Things) devices and networks, including connecting, programming and testing the networks and devices for functionality against a given performance objective.

It applies to those in roles including software developers, programmers or network engineers, working as embedded systems engineers, IoT developers or senior software developers, and who have basic knowledge of electrical engineering.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Internet of Things (IoT)

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to install devices	1.1 Establish and confirm IoT device and network task requirements 1.2 Determine and document different environmental factors in which sensors and IoT devices will be deployed 1.3 Gather and document IoT device programming requirements according to business need 1.4 Determine and document organisational IoT security requirements 1.5 Determine remaining networking, software and installation architecture requirements

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	1.6 Lodge documentation according to organisational requirements
2. Install devices	2.1 Install required networks according to technical specifications 2.2 Connect IoT devices to network according to specifications 2.3 Configure required sensors and determine operational needs aligned to specifications
3. Finalise device installation	3.1 Test connectivity of networks against technical specifications 3.2 Test device connectivity against specifications 3.3 Determine and document required system upgrades according to organisational requirements 3.4 Lodge documentation according to organisational requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	**DESCRIPTION**
Learning	• Monitors outcomes of decisions, considering results and identifying key concepts and principles that may be adaptable in the future
Numeracy	• Uses mathematical formulae to calculate required equipment, undertake measurements and determine response times
Oral communication	• Articulates information and requirements, using effective communication techniques and industry standard technical language intended for audience and environment
Reading	• Interprets technical, manufacturer and organisational documentation to determine and confirm job requirements
Writing	• Prepares required documentation expressing ideas requirements and recommendations for specific audiences according to organisational procedures
Planning and organising	• Uses a formal, logical planning processes together with an increasingly intuitive understanding of context
Problem solving	• Analyses context to recognise anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise
Self-management	• Takes end-to-end responsibility for identifying and considering relevant organisational protocols and requirements

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SKILL	DESCRIPTION
	• Uses systematic processes, setting goals, gathering required information and identifying and evaluating options against agreed criteria
Technology	• Demonstrates an understanding of principles, concepts, language and practices associated with the digital world

Unit Mapping Information

No equivalent unit. New unit.

Links

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Assessment Requirements for ICTIOT501 Install IoT devices and networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- connect at least three IoT devices to an IoT network.

In the course of the above, the candidate must:

- check and test environmental factors affecting connectivity of devices.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- functions and features of industry standard network and platforms that support IoT devices and components
- language uses required for installing IoT devices and networks
- functions and uses industry standard hardware and software tools relating to installing IoT devices and networks
- different environmental impacts and contexts relating to where and how IoT devices are used
- IoT security considerations and their impact
- testing and debugging methodologies and techniques required to test software, hardware and environmental impacts.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

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- tools, equipment, materials, hardware required to install land test an IoT network to devices
- industry standard software packages relevant to installing IoT devices and networks
- organisational, technical and manufacturer procedures and documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTIOT502 Program IoT devices

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to program IoT (Internet of Things) devices and networks, including developing, programming and testing devices against predetermined specifications.

It applies to those in roles including software developers, programmers or network engineers, working as embedded systems engineers, IoT developers or senior software developers, and who have basic knowledge of electrical engineering.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Internet of Things (IoT)

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify IoT business requirements	1.1 Establish business needs for IoT devices and applications 1.2 Determine and document different environmental factors in which sensors and IoT devices will be deployed 1.3 Determine microcontroller application and IoT device output according to business needs 1.4 Select required language and hardware with required memory, power constraints and functions
2. Program IoT device	2.1 Select microcontroller and circuit boards according to IoT requirements 2.2 Program microcontroller according to technical specifications

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	2.3 Test microcontroller and identify and rectify faults as required 2.4 Identify and rectify recordings and measurements against environmental variables and specifications
3. Finalise programming activities	3.1 Document processes and outcomes of programming activities 3.2 Submit document to required personnel and seek and respond to feedback 3.3 Finalise and resubmit documentation as required

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Uses mathematical formulae to calculate required equipment, record measurements and determine response times
Oral communication	• Articulates information and requirements, using effective communication techniques and industry standard technical language intended for audience and environment
Reading	• Analyses technical, manufacturer and organisational documentation to determine and confirm job requirements
Writing	• Prepares required documentation expressing ideas requirements and recommendations for specific audiences according to organisational procedures
Planning and organising	• Uses a formal, logical planning processes together with an increasingly intuitive understanding of context
Problem solving	• Uses nuanced understanding of context to recognise anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise
Self-management	• Takes full responsibility for identifying and considering relevant organisational protocols and requirements • Uses systematic processes, setting goals, gathering required information and identifying and evaluating options against agreed criteria
Technology	• Demonstrates an understanding of principles, concepts, language and practices associated with the digital world

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Unit Mapping Information

No equivalent unit. New unit.

Links

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Assessment Requirements for ICTIOT502 Program IoT devices

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- research, select and program at least one IoT device for at least two different environmental conditions.

In the course of the above, the candidate must:

- test IoT device function and environmental variables
- document programming processes and outcomes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- language used to program IoT devices
- laboratory tools including:
  - power supply
  - silla scope
  - spectrum analyser
  - signal generator
- schematic drawing documentation and reading tools
- principles of electricity, energy and electricity usage, as they relate to IoT devices
- principles and functions of sensors and wireless communication
- uses and features of microcontroller programming, microprocessors and microcontrollers
- basic principles of soldering and manufacturing processes and related electrical circuits
- basic mathematical equations, algebra, signal processing and statistics concepts and procedures
- operational procedures and safety checks for using power usage instruments
- different environments, contexts and its impact where IoT devices are used

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- readings and standards of workplace electrical equipment range
- testing and troubleshooting methodologies and techniques.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- tools, equipment, materials, hardware required to program IoT devices
- microcontroller and required text editor software
- technical and manufacturer documentation
- environment with different factors applicable for IoT use.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTIOT503 Design and test IoT devices and networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to design and test (Internet of Things) IoT devices and networks.

It applies to those who utilise a moderate level of technical knowledge to carry out and evaluate the connectivity of IoT devices and networks.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Internet of Things (IoT)

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Scope design options to design IoT devices and networks	1.1 Discuss IoT device and network needs with required personnel 1.2 Determine the nature, purpose and types of resources available to design IoT devices 1.3 Research industry standard IoT devices and networks 1.4 Determine design topology of scoped network and IoT devices in agreement with required personnel
2. Evaluate IoT and network design options	2.1 Discuss advantages and disadvantages of available resources to design IoT devices and networks with required personnel 2.2 Evaluate resources to be utilised to design IoT devices and networks 2.3 Communicate activities required to avoid design and

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	performance of IoT device and network issues
3. Produce design documentation and test IoT devices and networks	3.1 Produce a design report and present to required personnel for approval 3.2 Test connectivity and ensure design compatibility with network and devices

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Monitors outcomes of decisions, considering results and identifying key concepts and principles that may be adaptable in the future
Oral communication	• Articulates information and requirements, using effective communication techniques and industry standard technical language intended for audience and environment
Reading	• Interprets technical, manufacturer and organisational documentation to determine and confirm job requirements
Writing	• Prepares required documentation expressing ideas requirements and recommendations for specific audiences according to organisational procedures
Planning and organising	• Uses a formal, logical planning processes together with an increasingly intuitive understanding of context
Problem solving	• Uses nuanced understanding of context to recognise anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise
Self-management	• Takes full responsibility for identifying and considering relevant organisational protocols and requirements • Uses systematic processes, setting goals, gathering required information and identifying and evaluating options against agreed criteria
Technology	• Demonstrates an understanding of principles, concepts, language and practices associated with the digital world

Unit Mapping Information

No equivalent unit. New unit.

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Assessment Requirements for ICTIOT503 Design and test IoT devices and networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- research, design and test at least two IoT devices according to organisational needs.

In the course of the above, the candidate must:

- communicate advantages and disadvantages of IoT devices in specified networks
- produce design reports for the two devices.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- functions and features of industry IoT devices and networks
- types of resources available to design IoT devices
- IoT design topologies
- advantages and disadvantages of resources available to design IoT devices and networks
- methods to determine compatibility between IoT devices and networks
- characteristics of design reports for IoT devices
- organisational policies and procedures to design IoT devices and networks.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- tools, equipment, materials, hardware required to design and test IoT devices and networks

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- environmental conditions and specifications required for design IoT devices and networks.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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ICTNWK307 Provide network systems administration

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to manage the technical elements of a network, including contributing to a disaster recovery plan and network systems performance monitoring.

It applies to individuals working as frontline technical support personnel, who are responsible for network systems administration.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to provide network systems administration	1.1 Identify network performance requirements 1.2 Determine required security level according to organisational requirements 1.3 Determine required capacity of network according to organisational requirements 1.4 Determine required user access privileges and usage according to user account records and organisation policies and procedures
2. Provide client access and security features	2.1 Provide logins, passwords and applications to users according to organisational requirements 2.2 Provide file access to required users according to

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ELEMENT	PERFORMANCE CRITERIA
	organisational requirements 2.3 Prepare documented security user data according to organisational policies and procedures
3. Monitor network performance	3.1 Analyse and respond to diagnostic information according to organisational requirements 3.2 Monitor software usage and identify any inappropriate or illegal use according to organisational policies and procedures 3.3 Delete any identified illegal software from network 3.4 Monitor hardware response time, and required performance indicators 3.5 Provide feedback to required personnel on performance indicators

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Reading	• Interprets contextual information from organisational guidelines • Interprets systems design terminology, syntax and diagrams, and applies information to task
Writing	• Prepares documentation outlining security user data according to organisational procedures
Oral Communication	• Obtains information to confirm task requirements and provides feedback to required personnel using succinct verbal language
Numeracy	• Interprets numerical data relating to network operations and performance indicators
Teamwork	• Selects appropriate form, channel and mode of communication for a specific purpose, relevant to own role
Planning and organising	• Plans own work requirements and prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes • Takes responsibility for planning and organising own workload, identifying ways of sequencing and combining elements for greater efficiency, and considering how to link with work of others
Problem solving	• Responds to highly obvious routine problems, using step by step instruction and procedures, or by a trial and error process, for

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	non-critical situations
Technology	• Demonstrates an understanding of purposes, specific functions and key features of common digital systems, and tools, and operates them effectively to complete routine tasks

Unit Mapping Information

Supersedes and is equivalent to ICTNWK301 Provide network systems administration.

Links

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Assessment Requirements for ICTNWK307 Provide network systems administration

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, and to:

- sustain the operation of at least one network and meet organisational specifications
- use diagnostic test results to maintain network's integrity.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- network's operating system
- key elements of a disaster recovery policy
- features of network file and folder permissions
- vendor service-level agreements
- operating systems supported by an organisation, including functions and basic features
- organisational policies and procedures including:
  - access, security and networks
  - protection against, and elimination of computer viruses
  - deleting, restoring and archiving files
  - creating logons
- personal responsibilities for software copyright.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a live network

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- industry standard systems administration tools
- organisational policy and procedures
- industry standard hardware, software, tools, licenses and digital devices
- business and client requirements
- project deliverables.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK308 Determine and action network problems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to identify, document and provide solutions to network related problems in the context of the technical environment.

It applies to individuals involved in frontline technical support, who maintain network continuity by isolating and rectifying network problems as they arise.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to action network problems	1.1 Identify organisational policies and procedures to document user reported network problems 1.2 Determine network problem reported by organisational users 1.3 Document reported network problem according to organisational policies and procedures
2. Determine service level requirements and agreements	2.1 Determine existing third-party insurance policies and existing coverage 2.2 Determine existing maintenance and technical support agreements 2.3 Verify scope and coverage of maintenance and technical support agreements according to organisational

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ELEMENT	PERFORMANCE CRITERIA
	requirements
3. Carry out maintenance support	3.1 Diagnose and confirm scope of identified problem according to task requirements 3.2 Determine solution to identified problem, including hardware and software components and action required 3.3 Obtain required hardware and software components 3.4 Carry out required resolution maintenance according to task requirements
4. Prepare and submit maintenance report	4.1 Refer unresolved maintenance requirements to higher level service area 4.2 Prepare maintenance report according to support agreements and organisational requirements 4.3 Submit maintenance report to required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Interprets systems design terminology, syntax and diagrams, and applies information to task • Integrates and evaluates a range of textual information to maintain effective methods and appropriate standards in technical environment
Writing	• Prepares documentation outlining reported network problem and recommendation according to organisational procedures
Oral Communication	• Uses listening and questioning techniques to articulate information and task requirements using succinct verbal language
Numeracy	• Interprets numerical data relating to network operations and performance indicators
Planning and organising	• Completes tasks within workplace timeframes • Demonstrates responsibility for planning and organising own workload, identifying ways of sequencing and combining elements for greater efficiency, and considering how to link with work of others
Problem-solving	• Initiates standard procedures when responding to familiar problems within immediate context • Responds to highly obvious routine problems, using step by step instruction and procedures, or by a trial and error process, for

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	non-critical situations
Technology	• Demonstrates an understanding of purposes, specific functions and key features of common digital systems, and tools, and operates them effectively to complete routine tasks

Unit Mapping Information

Supersedes and is equivalent to ICTNWK302 Determine and action network problems.

Links

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Assessment Requirements for ICTNWK308 Determine and action network problems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- determine and action at least two different network problems reported by at least two different organisational users
- document finalised solution for two different reported network problems.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- common networking procedures for diagnostic testing and solution seeking
- organisational policies and procedures for documenting and logging reported service issues
- contracting and maintenance requirements
- organisational problem escalation procedures
- inventory processes that may be used to determine and action network problems
- technical features and functions of network hardware and software systems
- common network problems relating to organisational information
- agreements used for technical support.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- reported network user problems
- a network
- hardware

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- diagnostic tools, components and software
- records and reports
- organisational guidelines and procedures
- industry standard ICT blueprint.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK309 Configure and administer network operating systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to create a network operating system and set up and use administrative tools to manage the network.

It applies to individuals who are required to provide frontline technical support to maintain network continuity to a network operating system.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and assess network features	1.1 Determine organisational policies and procedures used to administer network operating systems 1.2 Determine interfaces used by organisation’s existing network 1.3 Identify potential network integration compatibility issues and risks
2. Administer and support system	2.1 Format hard drives, set up security restrictions and establish user log-in information according to organisational requirements 2.2 Determine organisational data requirements and data access frequency on systems interaction map 2.3 Plan required upgrades and reconfigurations to network

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ELEMENT	PERFORMANCE CRITERIA
	operating system according to organisational requirements 2.4 Implement planned upgrades and reconfigurations according to task requirements
3. Set up and manage network file system	3.1 Create file and folder structure according to organisational requirements, policies and procedures 3.2 Set security access and sharing of file system to meet organisational requirements 3.3 Identify and implement required network operating system virus protection
4. Administer user services and user accounts	4.1 Create users and groups required to facilitate user security and network access according to user authorisation and organisational requirements 4.2 Verify successful user access to authorised network data and resources, and documents outcomes
5. Provide backup security support	5.1 Scan and clean network of viruses 5.2 Perform backup of network according to organisational procedures and requirements 5.3 Document processes used and lodge with required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	• Analyses and consolidates technical information and data from a range of sources against defined criteria and requirements
Writing	• Prepares documentation describing outcomes and processes using relevant language according to organisational requirements
Oral communication	• Uses listening and questioning techniques to articulate information and task requirements using succinct verbal language
Teamwork	• Uses appropriate methods to communicate with a range of stake holders and co-workers across different contexts • Uses a range of strategies to establish a sense of connection and build rapport with clients and co workers
Planning and organising	• Plans own work requirements and prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes

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Unit Mapping Information

Supersedes and is equivalent to ICTNWK303 Configure and administer a network operating system.

Links

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Assessment Requirements for ICTNWK309 Configure and administer network operating systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, and to:

- set up and manage at least one network operating system.

In the course of the above, the candidate must:

- use network administrative tools to carry out system administration tasks
- manage the network file system
- create the network configuration required by the client
- provide user services and user accounts
- provide backup and service restoration capability.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- antivirus software, its operation, installation and update procedures
- organisational and industry standard network operating system (NOS)
- facilities available in an operating environment
- features and capabilities of networking technologies
- implementation of network security in a local area network (LAN) including:
  - file and folder permissions
  - users and group settings
- monitoring aspects of network performance or traffic including:
  - system administration tools
  - third-party tools.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- industry standard ICT blueprint
- user network requirements
- antivirus software
- network administration tools
- a live network with a representative range of networked environments and operating systems
- a server
- technical records, organisational policies, access policy and documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK310 Administer network peripherals

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to manage an environment of networked peripheral devices, in order to provide services to client users.

It applies to individuals working as frontline technical support personnel, responsible for connecting, maintaining and administering peripheral devices attached to networks.

No legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to install peripherals to a network	1.1 Determine location of peripherals according to user and organisational requirements 1.2 Connect peripherals to network according to vendor approved methods and organisational requirements 1.3 Connect peripherals to computers in network 1.4 Add peripheral accessories and upgrades to printer according to organisational requirements
2. Configure and manage peripheral services	2.1 Install software required and manage local and network connected peripherals 2.2 Setup name identifiers for peripherals and control queues according to organisational policies and procedures 2.3 Configure security and user access to peripherals

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ELEMENT	PERFORMANCE CRITERIA
	2.4 Configure workstation for peripherals according to organisational requirements
3. Administer and support peripheral services	3.1 Assign priority to control queues according to organisational requirements 3.2 Create templates for use on network according to organisational policies and procedures 3.3 Configure settings on network and create maintenance schedules, usage logs, and cost centre usage statistics
4. Maintain peripherals and fix common problems	4.1 Establish a regular maintenance schedule according to peripheral manufacturer guidelines and organisational requirements 4.2 Asses peripheral usage and traffic and recommend additional peripherals as required 4.3 Determine failures of peripheral services and devices and rectify as required 4.4. Document finalised process and lodge with required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Oral communication	• Uses listening and questioning techniques to articulate information and task requirements using succinct verbal language
Reading	• Interprets textual information from manufacturers guidelines to establish and follow a regular maintenance schedule
Writing	• Prepares documentation outlining finalised processes using relevant and succinct language according to organisational requirements
Teamwork	• Recognises and addresses common cultural and other differences of people in work context • Uses a limited range of accepted practices for communicating in a work environment
Planning and organising	• Takes responsibility for planning and organising own workload, identifying ways of sequencing and combining elements for greater efficiency, and considering how to link with work of others
Problem solving	• Takes responsibility for addressing predictable and some less predictable problems, including equipment services or devices

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SKILL	DESCRIPTION
	malfunctions
Self-management	• Takes personal responsibility for adherence to legal/regulatory responsibilities relevant to own work context with specific reference to work health and safety requirements

Unit Mapping Information

Supersedes and is equivalent to ICTNWK304 Administer network peripherals.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK310 Administer network peripherals

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- install, configure and troubleshoot network peripherals to at least one network.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- network peripherals and their configuration
- organisational deliverables that may be used to administer network peripherals
- current industry standards for network peripherals
- general construction and operation of peripheral devices to facilitate troubleshooting.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a range of internal and external network peripherals including:
  - mouse
  - keyboard
  - monitor
  - printer
  - internal modem
- industry standard ICT blueprint
- network administration tools
- live network with a representative range of networked client server environments and operating systems

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- technical records, organisational policies and documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK311 Install and test network protocols

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to install and test network protocols in a networking environment.

It applies to individuals with Information and Communications Technology (ICT) skills, who are required to provide network support to ensure that appropriate protocols have been installed in networks to allow user functionality and maintenance.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to install network protocols	1.1 Determine network protocol, user and task requirements 1.2 Select network protocol applications according to task requirements 1.3 Determine network protocol services according to task requirements 1.4 Design network addressing system according to protocol and task requirements
2. Install network protocols	2.1 Install and validate network protocol services according to task requirements 2.2 Install required network addressing system 2.3 Apply internet protocol (IP) addressing scheme according to user

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ELEMENT	PERFORMANCE CRITERIA
	needs and organisational policies and procedures 2.4 Configure IP addresses on hosts and workstations
3. Test network protocols	3.1 Test and validate network protocols according to user requirements 3.2 Seek and respond to network protocol performance feedback 3.3 Store unused ICT equipment and dispose of redundant ICT equipment according to manufacturer specifications and organisational procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Ensures knowledge of legislative requirements and products is kept up to date
Reading	• Recognises and interprets textual information, including technical manuals to establish the job requirements
Writing	• Prepares required documentation outlining new file systems, user access and disaster recovery procedures using specific and relevant language
Oral Communications	• Uses listening and questioning techniques to articulate information and task requirements using succinct verbal language
Self-management	• Identifies roles and responsibilities for task and makes decisions on work completion parameters in accordance with organisational procedures, WHS and environmental guidelines
Technology	• Identifies the purposes, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine tasks

Unit Mapping Information

Supersedes and is equivalent to ICTNWK305 Install and manage network protocols.

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Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK311 Install and test network protocols

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- configure, test and validate network protocols in order to facilitate interconnectivity on at least one occasion
- install and manage network protocols in a network and troubleshoot problems on at least one occasion.

In the course of the above, the candidate must:

- adhere to work health safety (WHS) requirements according to organisational policies and procedures.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- business domains, including the organisational structure and business functionality of the network
- user needs, manufacturer specifications and organisational policies and procedures
- network protocol required to install and manage network protocols
- required communications technologies and their associated protocols
- industry accepted hardware and software products, and general features and capabilities
- network protocols currently in use in the organisation and industry, including:
  - transmission control protocol
  - internet protocol (TCP/IP)
  - OSI models
- vendor product range and development directions
- network protocols transcend organisational size and network complexity.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a live network
- application software and operating system
- networked computers
- organisational guidelines
- technical documentation and installation manuals
- vendor software
- work health and safety (WHS) guidelines, policies and procedures.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK422 Install and manage servers

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to install and manage a server. It includes the ability to conduct initial configuration and testing, administration, software distribution and updates, profiling and troubleshooting.

It applies to individuals with Information and Communications Technology (ICT) skills, involved in network management, server administration and similar roles.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to install a server	1.1 Identify required server applications and features according to organisational requirements 1.2 Determine required operating system features and network service outputs according to task requirements 1.3 Access and back up local data according to organisational policies and procedures 1.4 Arrange access to site and advise users of deployment and down time expectations
2. Install server	2.1 Create disk partitioning scheme, file systems and virtual memory according to business needs 2.2 Install and configure network operating system, server

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ELEMENT	PERFORMANCE CRITERIA
	applications and network services according to task requirements 2.3 Reconnect and reconfigure connectivity devices 2.4 Patch operating system and applications, restore security and reliability requirements 2.5 Restore local data to new server according to organisational requirements
3. Configure and administer the server	3.1 Configure network directory service according to organisational requirements, policies and procedures 3.2 Create and manage security and network access to users according to organisational requirements 3.3 Configure user environment using operating system policies and scripts 3.4 Create directory structure and quotas according to organisational requirements
4. Test server	4.1 Test server against task requirements 4.2 Seek and respond to feedback on server performance from required personnel 4.3 Test and validate any changes or additions against organisational requirements
5. Finalise documentation and clean-up worksite	5.1 Document configuration and operational changes made to server according to organisational policies and procedures 5.2 Document server status according to organisational procedures 5.3 Dispose of excess equipment according to organisational and e-waste policies

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Keeps up to date with organisational and e-waste recycling policies and procedures relevant to own rights and responsibilities
Numeracy	• Identifies and interprets numerical data associated with devices, networks, servers and component specifications
Oral communication	• Uses listening and questioning techniques to confirm information and requirements and gather feedback

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SKILL	DESCRIPTION
Reading	• Identifies, interprets and analyses online and hard copy documentation containing complex ICT related terminology, acronyms and concepts
Writing	• Prepares required documentation conveying explicit recommendations, requirements and information using specific and relevant language
Planning and organising	• Uses organisational policies and procedures in context when negotiating, planning and undertaking work
Problem solving	• Responds intuitively to problems requiring immediate attention, quickly drawing on experience to devise solutions
Technology	• Identifies purpose, needs and limitations when selecting devices and applications for different tasks

Unit Mapping Information

Supersedes and is equivalent to ICTNWK401 Install and manage a server.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK422 Install and manage servers

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- install and manage at least one server
- document and lodge outcomes and process.

In the course of the above, the candidate must:

- manage server operating system, including user accounts, file, network directory and print services
- perform backup and recovery
- update operating system and software
- troubleshoot server and network failures.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard network hardware and software systems and their requirements, including:
  - network operating systems (NOS)
  - server applications including compatibility issues and resolution procedures
- desktop applications and operating systematic server installation and maintenance processes and procedures, including:
  - documentation skills for networks
  - error logging and reporting
- high availability options for file systems, including redundant array of independent disks (RAID) and replication
- network directory services and network service configuration options for performance tuning user authentication

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- processes and procedures required to support and manage a server, including:
  - best practice for implementing backup and recovery procedures
  - boot process
  - operating system help and support utilities
  - operating system installation methods, including installation from CD or DVD, universal serial bus (USB) boot disk, network and script (automated install) printer management
- process and task management, including:
  - process termination
  - task scheduling utilities
- troubleshooting tools and techniques including:
  - network diagnostic utilities user account and password management.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a site where server installation may be conducted
- relevant server specifications including:
  - cabling
  - local area networked (LAN) computers
  - server diagnostic software
  - switch
- client requirements
- wide area network (WAN) service point of presence
- workstations
- relevant regulatory documentation that affects installation activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK423 Manage network and data integrity

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to lead development of asset protection processes, determining threats and implementing controls to mitigate risk.

It applies to individuals in the Information Communications Technology (ICT) industries who are responsible for implementing and managing the organisational disaster recovery and asset protection policy and procedures of a network.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Assess organisational network and security policies	1.1 Identify organisational security policies and procedures 1.2 Identify security access and user privileges according to organisational requirements 1.3 Determine compatibility of identified security access user privileges to organisational requirements
2. Audit system assets	2.1 Conduct audit on system hardware and software assets according to organisational procedures and guidelines 2.2 Document audit findings according to organisational procedures 2.3 Lodge audit findings documents with required personnel

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ELEMENT	PERFORMANCE CRITERIA
3. Protect assets from threats	3.1 Determine environmental threats to data 3.2 Determine data protection systems and controls according to organisational requirements 3.3 Implement data protection systems according to organisational requirements 3.4 Implement and test antivirus and anti-malware solutions according to vendor specifications and organisational requirements
4. Develop a backup solution	4.1 Determine data backup types compatible to organisational systems and requirements 4.2 Plan backup solution according to organisational requirements 4.3 Implement backup solution and restore backed up media 4.4 Implement real time backup and data sync solution according to organisational requirements
5. Monitor network performance	5.1 Determine available network performance monitoring tools compatible to existing network 5.2 Implement network performance monitoring tools according to task requirements 5.3 Document network performance expectations and actual performance according to organisational procedures 5.4 Lodge document with required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Oral communication	• Uses verbal techniques to confirm information and requirements, communicate ideas and gather feedback
Reading	• Interprets textual information from relevant sources to identify software solutions and adherence to organisational security policies and procedures
Writing	• Prepares required documentation conveying explicit recommendations, requirements and information using specific and relevant language
Planning and	• Determines job priorities, resources and equipment, and works logically and systematically to undertake clearly defined and familiar

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SKILL	DESCRIPTION
organising	tasks
Problem solving	• Initiates standard procedures when applying solutions in networks, including systems management processes, and deploys rapid solutions to problems involving management of network assets
Self-management	• Demonstrates an understanding of, and compliance with, explicit organisational policies and procedures • Takes responsibility for routine decision making by selecting from a range of predetermined options in routine situations, identifying and taking some situational factors into account
Technology	• Demonstrates an understanding of purposes, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine tasks

Unit Mapping Information

Supersedes and is equivalent to ICTNWK403 Manage network and data integrity and ICTTEN511 Administer a data communications network.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK423 Manage network and data integrity

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- maintain and manage at least one network
- maintain data integrity whilst managing at least one network
- document and lodge outcomes and process.

In the course of the above, the candidate must:

- use industry standard tools to conduct audit on system assets
- implement and test antivirus solution
- employ systems to negate environmental threats
- demonstrate features of data backup, restore and system roll back
- perform network monitoring using a variety of current standard tools
- add network controls according to network and data integrity policies.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- broad principles of current data integrity on a network, including:
  - auditing and control of user access
  - asset tracking and auditing
- industry standard antivirus solutions and techniques
- backup, restore and rollback procedures
- system and network monitoring tools and their related functions
- organisational structure and business functionality as they relate to data integrity
- tools and applications required to manage network and data integrity, including disaster recovery processes.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a site or prototype where network and data integrity strategies may be implemented and managed
- use of network support tools currently used in industry
- organisational security policies, manufacturer recommendations and network and data integrity protection standards.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standard.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK424 Install and operate small enterprise branch networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to utilise networking fundamentals, including wide area network (WAN) technologies, basic security, route and switch operations as well as to configure simple networks.

It applies to individuals involved in network support positions with the Information Communications Technologies (ICT) skills required to use tools, equipment, software and protocols to install, operate, a small enterprise branch network.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to install network	1.1 Determine organisational network performance and data flow requirements 1.2 Identify protocols in OSI and TCP/IP models according to organisational requirements 1.3 Identify common network problems at layers 1, 2, 3 and 7
2. Install small switched network	2.1 Select media, cables, ports, and connectors according to task requirements 2.2 Identify network segmentation, traffic management and switching requirements

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ELEMENT	PERFORMANCE CRITERIA
	2.3 Perform, save and verify initial switch configuration according to task requirements 2.4 Verify network status and switch operation according to technical and organisational standards 2.5 Implement and verify security level for switch according to organisational requirements
3. Implement IP addressing scheme and services	3.1 Create and implement addressing scheme to network according to task requirements and technical standards 3.2 Assign and verify live IP addresses to hosts, servers and networking devices in a local area network (LAN) environment 3.3 Implement static and dynamic addressing services for hosts 3.4 Enable and verify operation of network address translation (NAT) 3.5 Configure and implement dynamic host configuration protocol (DHCP) on router according to task requirements
4. Install small routed network	4.1 Select media, cables, ports, and connectors according to task requirements 4.2 Perform, save and verify basic router configuration according to task requirements 4.3 Install and verify classless routing protocol and network connectivity with required personnel 4.4 Implement password and physical security according to organisational requirements
5. Connect WAN links	5.1 Determine required method for connecting to a WAN 5.2 Implement and verify basic WAN serial connection
6. Finalise branch network activities	6.1 Seek network performance capability feedback from required personnel 6.2 Document finalised process and submit to required personnel 6.3 Store unused ICT equipment according to organisational policies and procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION

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Oral Communication	• Uses listening and questioning techniques to confirm information and requirements and gather feedback from required personnel
Reading	• Interprets and critically analyses complex texts • Applies appropriate strategies to construct meaning from complex texts
Writing	• Prepares documentation detailing finalised process • Writes and edits code and technical data in a logical manner using required syntax and specifications

Unit Mapping Information

Supersedes and is equivalent to ICTNWK404 Install, operate and troubleshoot a small enterprise branch network.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK424 Install and operate small enterprise branch networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- configure, install and operate one small enterprise branch network
- identify, test and verify performance capability issues for a small enterprise branch network.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- internet protocol (IP) addressing scheme architecture
- network topologies, protocols and security solutions defined network problems
- Open Systems Interconnection (OSI) layers of networking
- Transmission Control Protocol (TCP)
- Network Address translation (NAT)
- dynamic host configuration protocol.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a site where network installation may be conducted
- small enterprise routers and switches
- network’s design documentation
- equipment specifications
- hardware and software required to install and operate small enterprise branch networks
- organisational guidelines

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- computers
- documents including policies and procedures that may affect installation and operation of a network.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK425 Build small wireless local area networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to build and arrange connectivity to a single zone wireless local area network (WLAN).

It applies to individuals with the Information and Communications Technology (ICT) skills involved in building wireless access points or wireless router in a small-to-medium enterprise or similar environments.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to build network	1.1 Identify network needs and organisational requirements 1.2 Determine position for user access point according to environmental and organisational requirements 1.3 Plan schedule of works for preliminary work to be carried out according to organisational and technical requirements

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ELEMENT	PERFORMANCE CRITERIA
2. Select, install and configure wireless access point	2.1 Determine access point device according to organisational and technical requirements 2.2 Install and configure access point and services according to organisational requirements 2.3 Test access point and verify wireless connection and security arrangements according to task requirements 2.4 Select, install and configure legacy equipment and wireless card
3. Configure network	3.1 Configure security and other key parameters according to organisational requirements 3.2 Test security and firewall arrangements according to organisational requirements 3.3 Test network general compatibility and access with user equipment
4. Prepare network users	4.1 Determine required network devices according to organisational requirements 4.2 Establish and demonstrate user pairing and log-on arrangements 4.3 Inform users of wireless network etiquette and traffic capacity issues according to organisational policies and procedures 4.4 Develop user documentation and network settings according to organisational and technical standards 4.5 Lodge documentation with required personnel according to organisational policies and procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria

SKILL	DESCRIPTION
Oral communication	• Uses verbal techniques to confirm information and requirements, communicate ideas and gather feedback
Reading	• Interprets textual information from relevant sources to identify software solutions and adherence to organisational security policies and procedures
Writing	• Prepares required documentation conveying explicit recommendations, requirements and information using specific and

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SKILL	DESCRIPTION
	relevant language
Planning and organising	• Determines job priorities, resources and equipment, and works logically and systematically to undertake clearly defined and familiar tasks
Problem solving	• Initiates standard procedures when applying solutions in networks, including systems management processes • Deploys rapid solutions to problems involving building wireless local area networks and technical environment
Self-management	• Demonstrates and understanding of, and compliance with explicit organisational policies and procedures • Takes responsibility for routine decision making by selecting from a range of predetermined options in routine situations, identifying and taking some situational factors into account
Technology	• Demonstrates an understanding of purposes, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine tasks

Unit Mapping Information

Supersedes and is equivalent to ICTNWK405 Build a small wireless local area network.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK425 Build small wireless local area networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- install, configure and test at least two wireless access points
- monitor and resolve wireless network issues on at least two wireless local area networks
- develop and document user training material.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- basic principles of network security, including:
  - audit and intrusion detection systems
  - auditing and penetration testing techniques
  - authentication methods
  - network protocols and operating systems
  - security protocols, standards and data encryption
- factors that impact on a small wireless network, including:
  - bandwidth and quality of service
  - factors affecting signal quality
  - layer 2 and layer 3 design issues
  - features of a small office or home office (SOHO) network
  - wireless security strategies
  - wireless topologies
  - wireless local area network (WLAN) solutions
- protocols and their application for wireless networks, including:
  - transmission control protocol (TCP)
  - internet protocol (IP).

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- site at which a small wireless network can be installed
- tools to install small wireless network
- network technical requirements
- network infrastructure, including wireless hardware and software
- documentation and guidelines that may affect wireless network installations.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTNWK426 Install and configure client-server applications and services

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to install, configure, maintain and support server-side applications on network workstations, in both Windows and Linux based networks.

It applies to individuals working as network administrators and network support roles who implement the installation and configuration of client-server-based software.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to provide client-server software requirements	1.1 Identify client-server output requirements according to organisational needs 1.2 Plan client-server solution according to organisational requirements 1.3 Determine required hardware to implement client-server solution 1.4 Determine host operating system for client-server software
2. Install, configure, and manage services	2.1 Install client-server software and client hardware according to organisational policies, procedures and

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ELEMENT	PERFORMANCE CRITERIA
	guidelines 2.2 Configure client-server software according to vendor guidelines 2.3 Manage installation of upgrades and patches to client-server software environment 2.4 Backup client-server software according to technical and organisational requirements
3. Determine configuration effect on network design	3.1 Identify required utilities to monitor and determine network performance capability according to task requirements 3.2 Create network performance benchmarks 3.3 Determine performance effect on network after installation of client-server software
4. Test and finalise client-server activities	4.1 Test operation of client-server software against task requirements 4.2 Store unused ICT equipment according to manufacturer specifications and organisational procedures 4.3 Obtain sign-off from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Interprets numerical information to analyse memory, hard disk and performance requirements
Oral communication	• Selects appropriate form, channel and mode of communication for a specific purpose relevant to own role
Reading	• Recognises and interprets technical and vendor-specific information to determine business requirements

Unit Mapping Information

Supersedes and is equivalent to ICTNWK407 Install and configure client-server applications and services.

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Links

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Assessment Requirements for ICTNWK426 Install and configure client-server applications and services

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- install, configure, monitor and maintain at least one server-based client software to communicate with existing server software.

In the course of the above, the candidate must:

- test operation of client-server software
- identify and implement required updates for client-server software
- monitor performance of client-server software
- backup and maintain client-server software.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- requirements for client-server applications and services, including:
  - computer hardware and software required
  - internet protocol (IP) addressing
  - networking fundamentals
  - operating systems
- operating system help and support utilities required, including:
  - procedures for implementing backup and recovery
  - software installation and configuration
  - user account and password management
  - troubleshooting tools and techniques
  - network diagnostic utilities.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- hardware and software supplies
- server and networking tools
- client-server based network
- appropriate client-server software
- ICT equipment used in industry
- relevant equipment documentation
- work health and safety guidelines
- ICT storage guidelines.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK427 Configure desktop environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to install, configure and support a desktop and workstation operating system in a networked environment.

It applies to individuals with competent technical skills employed in Information and Communications Technology (ICT) support roles or similar.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to install a desktop operating system	1.1 Determine desktop applications and feature requirements according to organisational requirements 1.2 Determine licensing, data migration, hardware and system requirements according to organisational requirements 1.3 Implement local data backups according to organisational and technical requirements
2. Install desktop operating system	2.1 Install and upgrade desktop operating system and applications according to task requirements 2.2 Configure and connect network settings and workstation according to task requirements 2.3 Patch operating system and applications according to task requirements

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ELEMENT	PERFORMANCE CRITERIA
	2.4 Restore local data to new workstation
3. Configure desktop environment	3.1 Configure required hardware devices 3.2 Administer user environment according to task requirements 3.3 Create file and directory structure according to task requirements 3.4 Configure access to external data and desktop applications according to business requirements
4. Operate command line interface	4.1 Open command line interface and run commands and scripts according to task requirements 4.2 Manipulate command line files according to task requirements
5. Configure desktop security	5.1 Modify default user security settings according to organisational policies and guidelines 5.2 Modify file and directory ownership, permissions and password security 5.3 Configure and implement security settings for desktop applications according to business requirements
6. Monitor and test desktop	6.1 Test desktop environment functionality and performance according to organisational requirements 6.2 Diagnose and rectify desktop operating errors according to task requirements 6.3 Document desktop environment and lodge with required personnel according to organisational policies and procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria

SKILL	DESCRIPTION
Numeracy	• Analyses and demonstrates an understanding of numerical test measurements to evaluate workstation performance
Oral Communication	• Uses listening and questioning techniques to confirm information and requirements using industry for intended audience
Reading	• Identifies and interprets technical material, organisational policy and regulatory information to determine job requirements

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Writing	• Prepares documentation detailing finalised process according to specified requirements
Problem solving	• Makes decisions that demonstrates an understanding of implications of legal and regulatory responsibilities related to own work

Unit Mapping Information

Supersedes and is equivalent to ICTNWK408 Configure a desktop environment.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK427 Configure desktop environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- install and configure at least one desktop operating system, including user accounts, file and print services and security
- perform backup and recovery, monitor and troubleshoot the desktop environment for one desktop operating system
- document the finalised process.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- features of desktop operating systems, applications, compatibility issues and resolution procedures
- configuration requirements of a desktop environment
- file naming conventions related to selected operating system
- network protocols and transmission control protocol or internet protocol (TCP/IP) network connectivity
- operating systems and their functions, including file system, memory management and process scheduling
- printer driver and queue management
- process or task management, including process termination
- tools available for remote assistance and administration
- troubleshooting tools and techniques, including network diagnostic utilities and remote assistance and administration tools
- user account, group and password administration and guidelines for selecting a secure password
- file system navigation and manipulation utilities
- software and hardware manufacturer and user licensing.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a site where server installation may be conducted
- relevant server specifications, including:
  - cabling
  - local area network (LAN)
  - diagnostic software
  - switch
  - client requirements
  - wide area network (WAN) service point of presence
  - desktop workstations
- required regulatory documentation that affects installation activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTNWK428 Create scripts for networking

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to undertake scripted programming tasks for networking related activities.

It applies to individuals with competent technical skills who are employed in network or systems administration roles.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to write networking scripts	1.1 Determine and document problem and script solution requirements according to organisational requirements 1.2 Employ abbreviated software development cycle to script creation according to task requirements 1.3 Develop pre-emptive downtime solution algorithm according to task requirements 1.4 Develop a guaranteed to end algorithm according to task requirements
2. Create and implement code	2.1 Select and create clear and concise code according to task requirements 2.2 Implement selection, iteration and sequence to control script execution flow according to task requirements

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ELEMENT	PERFORMANCE CRITERIA
	2.3 Implement sequential file input and output and retrieve and store information 2.4 Seek and respond to script operation from user input according to task requirements
3. Implement operating system tools	3.1 Use searching and sorting tools to select information from logging output of operating system (OS) 3.2 Implement controls and demonstrate capability of script to maintain a log of operations 3.3 Register and run scripts with OS scheduling facility
4. Test and finalise script activities	4.1 Test script against design specification and task requirements 4.2 Identify and resolve scripting language bugs, syntactical, logical and design errors 4.3 Store unused materials and ICT equipment according to manufacturing specifications and organisational procedures 4.4 File documentation in required location according to organisational procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Oral Communication	• Uses listening and questioning techniques to confirm information and requirements, communicate ideas and solutions, and gather feedback
Reading	• Identifies and interprets technical material, organisational policy and regulatory information to determine job requirements
Writing	• Prepares user and technical documentation detailing process according to organisational procedures • Writes and edits code and technical data in a logical manner using required syntax

Unit Mapping Information

Supersedes and is equivalent to ICTNWK409 Create scripts for networking.

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Assessment Requirements for ICTNWK428 Create scripts for networking

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design, document, construct and test a small single purpose operating system (OS) utility application in response to a problem description
- create a scripted program that access information stored in files on system and use system utility programs to sort and find information within files for one operating system (OS)
- document process.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- principles of algorithm design
- operating system components and processes, including:
  - command line interface
  - log files
  - program scheduling utilities
  - data types
  - operations and expressions
  - development methodologies
- tools, utilities and testing methods that may be used to create scripts for networking
- debugging for a variety of scripting scenarios
- programming structured control constructs: sequence, selection and iteration
- scripting techniques and language syntax that may be used to create scripts for networking.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- OS scheduling software
- storage guidelines for ICT equipment
- work health and safety requirements
- technical requirements
- software development environment
- software testing environment.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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ICTNWK429 Install hardware to networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to plan, manage and install new hardware components in a network.

It applies to individuals involved in technical Information and Communications Technology (ICT) support roles, including network administrators who support network hardware in a peer-to-peer or client-server networked environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine network hardware requirements	1.1 Determine network hardware and cabling requirements for local area network (LAN), wide area network (WAN), wireless networks according to organisational requirements 1.2 Identify any mobile equipment access design limitations according to task requirements 1.3 Determine effectiveness of organisational guidelines, purchasing policies, procedures, licensing arrangements and budget according to organisational requirements
2. Obtain and test network hardware	2.1 Identify technical specifications for required hardware according to task requirements 2.2 Test hardware capability according to organisational and

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ELEMENT	PERFORMANCE CRITERIA
	technical requirements 2.3 Document recommendations and provide document to required personnel 2.4 Determine and document licensing requirements and security issues according to organisational and industry standards 2.5 Obtain hardware according to recommendations and organisational requirements
3. Install and configure network hardware	3.1 Install hardware according to manufacturer and organisational policies, procedures and guidelines 3.2 Configure and test installation according to manufacturer and task requirements
4. Provide instruction and support for installed products	4.1 Determine and document organisational user instructions and requirements from installed products 4.2 Provide instruction document to required personnel according to organisational requirements 4.3 Seek evaluation and feedback from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria

SKILL	DESCRIPTION
Learning	• Demonstrates an understanding of licensing and security issues relevant to job requirements
Numeracy	• Uses mathematical formulas and calculations to estimate and plan costs according to business budgets
Oral Communication	• Uses listening and questioning techniques to confirm information and task requirements, communicate ideas and solutions
Writing	• Prepares documentation detailing recommendations, requirements and organisational user instruction using cohesive language for intended audience
Technology	• Demonstrates and understanding of technical information and organisational procedures to determine job requirements

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Unit Mapping Information

Supersedes and is equivalent to ICTNWK410 Install hardware to a network.

Links

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Assessment Requirements for ICTNWK429 Install hardware to networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- evaluate client user requirements and hardware installation for at least one network
- install a range of network hardware by planning, managing and supporting the installation of new components in a network
- document finished process.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry, data and voice networking, security products, devices and procedures, including:
  - industry accepted network protocols
  - organisational contracting procedures and responsibilities
  - system diagnostic software
  - industry accepted network hardware and software products
  - hardware and software installation procedures
  - local area network (LAN) capabilities and characteristics, such as network type, internet protocol (IP) addressing, switch or hub operation
  - various features of network connections, including types of cables, cabling distance limitations and wireless connections
  - operating systems sufficient to enable basic installation
  - set-up and configuration procedures
- software packages supported by organisation.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- vendor hardware and software components
- application software and operating system
- hardware maintenance tools
- a live network
- networked computers
- organisational guidelines
- technical documentation and installation manuals.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTNWK430 Deploy software to networked computers

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to plan, manage and support installation of new and upgraded software to networked computers according to vendor and organisational specifications.

It applies to individuals involved in installing, configuring, maintaining and supporting software, including network administrators and network support staff.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine operating system requirements	1.1 Determine software and licensing according to organisational requirements 1.2 Determine hardware needs according to organisational requirements 1.3 Determine hardware and software requirements against local area network (LAN), wide area network (WAN), and wireless networks
2. Obtain deployment software to automate deployment	2.1 Determine required deployment software according to task requirements 2.2 Obtain required software and licences, technical specifications and support arrangements from vendors

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ELEMENT	PERFORMANCE CRITERIA
	2.3 Store software licences and manuals according to organisational guidelines
3. Automate installation of operating system	3.1 Plan and deploy operating system according to vendor installation procedures and organisational requirements 3.2 Configure and test installation according to vendor specifications and organisational requirements 3.3 Install updates and patches according to task requirements
4. Automate installation of software packages	4.1 Plan and deploy software packages according to vendor installation procedures and organisational requirements 4.2 Configure and test installation to task requirements 4.3 Install required updates and patches according to task requirements
5. Test and sign off	5.1 Test installed operating system and software and confirm error-free performance 5.2 Document security and licensing agreements according to organisational policies and procedures 5.3 Submit documentation to required personnel for final approval sign off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria

SKILL	DESCRIPTION
Oral Communication	• Uses active listening, observational and questioning techniques to confirm information and determine job requirements
Reading	• Recognises and interprets written technical, licensing and organisational
Writing	• Prepares required documentation conveying explicit recommendations, requirements and information using specific and relevant language
Planning and organising	• Uses effective planning structures and prioritises tasks according to output needs

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Unit Mapping Information

Supersedes and is equivalent to ICTNWK411 Deploy software to networked computers.

Links

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Assessment Requirements for ICTNWK430 Deploy software to networked computers

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, and to:

- plan and deploy automatic installation of operating system and software to at least two networked computers
- configure and test installation of automatic installation of operating system and software on at least two networked computers
- document finalised process.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- network protocols and operating systems
- transmission control protocols (TCP)
- internet protocols (IPs)
- network applications
- organisational contracting procedures and responsibilities that may be used in deploying software for networked computers
- software licensing requirements and documentation
- standards related to software deployment, including:
  - deployment software configuration
  - configuration of automated deployment processes
  - operating system deployment
  - software package deployment
  - troubleshooting deployment processes.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a site or prototype where deployment processes may be implemented
- a live network
- software tools to support implementation of deployment processes
- technical documentation and installation manuals
- required regulatory documentation that affects networking activities
- organisational guidelines.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTNWK431 Create network documentation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to determine network requirements and produce and evaluate network documentation.

It applies to individuals involved in roles requiring task management and competent Information and Communications Technology (ICT) skills, including network administrators, technicians and support personnel.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine network documentation requirements	1.1 Determine document purpose and standards according to organisational requirements 1.2 Define required network configuration 1.3 Develop naming standards and labelling schemes according to organisational requirements 1.4 Develop, calculate and verify network addressing scheme according to task requirements
2. Design network diagrams and checklists	2.1 Identify network software mapping tools according to task requirements 2.2 Design network diagrams according to task requirements and organisational procedures

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ELEMENT	PERFORMANCE CRITERIA
	2.3 Develop plans, checklists and manuals according to organisational procedures and task requirements
3. Produce network documentation	3.1 Validate documentation structure according to task requirements and organisational procedures 3.2 Produce network diagrams, plans and checklists according to organisational procedures 3.3 Produce network according to task requirements 3.4 Document procedure and policy manuals according to organisational requirements and industry standards
4. Complete network documentation	4.1 Check network documentation with required organisational personnel 4.2 Publish network documentation according to task requirements and organisational policies and procedures 4.3 Record and store network documentation according to organisational policies and procedures 4.4 Notify required personnel of completed network documentation and initiate final sign off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Recognises, compares and interprets technical data when developing network addressing scheme
Oral Communication	• Articulates requirements and strategies using technical language appropriate to audience and environment
Reading	• Gathers, interprets and analyses current industry information from a range of sources and identifies relevant and key information
Writing	• Prepares required documentation conveying explicit recommendations, requirements and information using specific and relevant language
Teamwork	• Identifies and takes steps to follow accepted communication practices and protocols

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Unit Mapping Information

Supersedes and is equivalent to ICTNWK412 Create network documentation.

Links

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Assessment Requirements for ICTNWK431 Create network documentation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, and to:

- design and implement at least one network document and publish to its intended environment.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- open systems interconnect (OSI) layered communication model
- network requirements related to:
  - applications
  - life cycles
  - manageability
  - quality of service
  - design concepts related to:
  - financial constraints
  - network topologies
  - organisation requirements
  - physical constraints
  - security issues.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

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- a site where network documentation can be carried out
- a live network
- software tools to support network documentation tasks
- relevant network documentation
- legislation and standards documentation
- industry codes of practice
- required regulatory documentation that affects networking documentation activities
- organisational guidelines.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTNWK432 Build an enterprise wireless network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to build an enterprise, community or mesh wireless network internally and externally to buildings.

It applies to individuals with task management, interpersonal and Information and Communications Technology (ICT) skills working in senior design roles in the networking area, who are required to develop complex wireless networks for organisations.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to install network	1.1 Determine network requirements according organisational requirements 1.2 Review existing network design documentation 1.3 Identify network topology according to task requirements 1.4 Identify required networking components according to technical and task requirements 1.5 Determine usability of installation and safety equipment according to technical standards and organisational requirements
2. Install and configure access points	2.1 Determine hardware according to task requirements 2.2 Install and configure wireless access hardware according to

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ELEMENT	PERFORMANCE CRITERIA
	task requirements 2.3 Configure security, monitoring, logging and quality of service features and networks 2.4 Calibrate test equipment according to task requirements 2.5 Test wireless network systems performance according to task requirements
3.Install and configure antennas	3.1 Select antennas according to task requirements 3.2 Install and configure wireless network access antennas to technical specification and task requirements 3.3 Measure and assess signal strength according to task requirements 3.4 Resolve and report any radio frequency interference issues to required personnel
4. Finalise network activities	4.1 Seek and respond to network performance feedback according to task requirements 4.2 Review planned maintenance and network performance continuity upgrade requirements 4.3 Document and store network settings and performance continuity recommendations according to organisational procedures 4.4 Store unused ICT equipment according to organisational and industry procedures and guidelines

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Interprets numerical information to calibrate equipment and measure and assess signal strength
Oral Communication	• Uses active listening, observational and questioning techniques to confirm information and using technical language appropriate to audience and environment
Reading	• Gathers, interprets and analyses information from a range of sources and identifies relevant and key information
Writing	• Prepares required documentation detailing finalised process in a logical manner using cohesive language
Planning and	• Uses a combination of formal, logical planning processes to ensure

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organising	work is completed according to time constraints and an increasingly intuitive understanding of context to identify relevant information and risks
Self-management	• Demonstrates an understanding of securing information in relation to own work and takes personal responsibility for identifying and managing risk • Initiates standard procedures when solving a broad range of ICT problems • Complies with explicit organisational policies and procedures • Recognises and applies protocols governing what to communicate, with whom and how in a range of different contexts
Technology	• Uses familiar digital systems and tools to access, organise, analyse and store information • Demonstrates an understanding of purposes, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine tasks

Unit Mapping Information

Supersedes and is equivalent to ICTNWK417 Build an enterprise wireless network.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK432 Build an enterprise wireless network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- select, install and configure required wireless hardware on at least one occasion
- test, monitor, and administer the installation on at least one occasion
- document finalised process.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- Industry standard wireless local area network (WLAN) and wireless area network (WAN) solutions, including:
  - audit and intrusion detection systems
  - auditing and penetration testing techniques
  - bandwidth and quality of service
  - factors affecting signal quality
  - layer 2 and layer 3 design issues
  - suitability for small office home office (SOHO) and enterprise local area networks (LANs)
  - transmission control protocols or internet protocols (TCPs/IPs) and applications
  - wireless topologies
- common features of security threats and how to develop a security strategy, including:
  - security protocols
  - standards
  - data encryption
- common network protocols and operating systems.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a site at which design, build and implementation of networking and ICT activities may be carried out
- industry standard ICT equipment
- network infrastructure, including wireless hardware and software
- required regulatory documentation that affects networking activities
- organisational guidelines.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK433 Install backbone technologies in a local area network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to install core layer (backbone) connectivity in a local area network (LAN) for applications between floors in a multi-storey and separate buildings.

It applies to individuals who apply specialised technical knowledge and a systematic approach to installing Information and Communications Technology (ICT) technologies and backbone connectivity in a LAN.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Design and prepare to install network requirements	1.1 Identify network requirements according to technical and organisational and requirements 1.2 Design network structure according to organisational requirements 1.3 Design network addressing system with subnet and host identities (IP addressing) and virtual LANs (VLANs) 1.4 Identify and document resource requirements according to organisational policies, procedures and task requirements
2. Install and configure	2.1 Install and configure networking switches and routers

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ELEMENT	PERFORMANCE CRITERIA
network backbone	according to task requirements 2.2 Install network protocol suites according to task requirements 2.3 Configure host and workstation network access according to task requirements
3. Test and validate network	3.1 Test network connectivity and ensure hosts on segments and VLANs operation parameters are met 3.2 Implement adjustments to systems structure according to task requirements 3.3 Document and validate network performance according to organisational policies and procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Interprets numerical information to calculate and interpret network connectivity
Oral communication	• Uses active listening, observational and questioning techniques to confirm information and using technical language appropriate to audience and environment
Reading	• Gathers, interprets and analyses current network design specifications and identifies relevant and key information
Writing	• Prepares required documentation detailing network performance using cohesive and relevant language for intended audience
Planning and organising	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context to prioritise tasks and contingency arrangements
Problem solving	• Demonstrates an understanding of purposes, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine tasks
Self-management	• Initiates standard procedures when responding to familiar problems within immediate context
Technology	• Uses mobile communication tools and specialised software to ensure that geographically distributed team members remain connected in virtual environments

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Unit Mapping Information

Supersedes and is equivalent to ICTNWK418 Implement backbone technologies in a local area network.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK433 Install backbone technologies in a local area network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, and to:

- install and configure backbone connectivity in a LAN on at least one occasion.
- build and test one asynchronous transfer mode (ATM) local area network (LAN) that provides the required services at the required communication standards
- document resource requirements and network performance.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- current and emerging industry standard practice associated with:
  - bandwidth limitations, measuring and testing
  - LAN and wide area network (WAN) network topologies (three-layer LAN hierarchy: core distribution and access)
  - MAC addresses, network layer protocols
  - open systems interconnect (OSI) layer modelling
  - routers virtual LANs
  - network interface cards (NICs) and switches, including:
  - fast Ethernet
  - gigabit and 10-gigabit Ethernet store-and-forward
  - fast-forward
  - fragment-free
  - internetworking protocol suites, including:
  - TCP/IP, IPX, DECnet, AppleTalk, IPv6.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a site at which installation of backbone and ICT activities may be carried out
- required web and technical applications
- documented installation guidelines on vendor products
- local area network infrastructure
- switches with various interfaces
- network administration tools.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK434 Identify and implement industry standard virtualisation technologies

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to use virtualisation technology to review and demonstrate work processes, skills and techniques and to deliver quality across the entire business.

This unit applies to individuals engaged in ongoing review and research, who review and maintain business processes at the most advanced level.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to use virtualisation software	1.1 Determine desktop virtualisation software needs according to organisational requirements 1.2 Identify industry standard virtualisation vendors and different types of virtualisation technology 1.3 Review and select desktop virtualisation software according to organisational requirements
2. Install and test virtualisation software	2.1 Install desktop virtualisation software according to technical and organisational requirements 2.2 Test features and functions of desktop virtualisation software according to technical and organisational

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ELEMENT	PERFORMANCE CRITERIA
	requirements 2.3 Seek and respond to desktop virtualisation software performance feedback according to task requirements
3. Evaluate desktop virtualisation software performance	3.1 Review and document organisational benefits of desktop virtualisation software 3.2 Lodge review document according to organisational policies and procedures 3.3 Dispose redundant ICT equipment and store unused ICT equipment according to organisational policies and procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Learning	• Contributes to the continuous improvement of current work practices, by applying basic principles of analytical and lateral thinking
Reading	• Critically analyses documentation from a variety of sources and records • Consolidates information to determine task requirements
Writing	• Prepares, edits and proofreads required documents to ensure clarity of meaning, and the accuracy and consistency of information
Planning and organising	• Takes responsibility for planning, sequencing and prioritising tasks and own workload, for efficiency and effective outcomes
Problem solving	• Makes routine decisions and implements standard procedures for routine tasks, using formal decision-making processes, for more complex and non-routine situations
Self-management	• Identifies, and acts on, issues that contravene relevant policies, procedures and legal requirements • Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements

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Unit Mapping Information

Supersedes and is equivalent to ICTNWK419 Identify and use current virtualisation technologies.

Links

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Assessment Requirements for ICTNWK434 Identify and implement industry standard virtualisation technologies

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify and implement at least one major virtualisation software technologies
- test output and performance of at least one major virtualisation software technologies
- document findings.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard trends and directions in Information and Communications Technology (ICT), in major industry technology standards used in virtualisation technology
- vendor product directions relating to virtualisation technology
- industry hardware and software products, their general features, capabilities and application
- technical information-gathering techniques
- environmental and sustainability policies of workplace
- features of virtualisation technology
- current standards of testing and evaluating virtualisation technology.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a site where industry-specific technologies are used
- industry-specific technologies currently used in industry
- virtualisation software.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standard.

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ICTNWK515 Develop configuration management protocols

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to develop administrative and technical procedures throughout the life cycle of a system, network, software and documentation project.

It applies to individuals working in a variety of information and communications technology (ICT) areas who develop and manage tasks that facilitate the development of a system, such as version control and naming standards.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish configuration management requirements	1.1 Establish identification standards for naming and version control of system, network, software and documentation to align with organisational needs 1.2 Establish tools and procedures for the required level of integration into the programming, system or network environment 1.3 Determine responsibilities for configuration management

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ELEMENT	PERFORMANCE CRITERIA
	within the project and for ongoing support, including approval of changes 1.4 Determine the appropriate points for configuration of particular items
2. Establish control mechanisms	2.1 Establish methods for identification and recording of change requests in line with organisational guidelines 2.2 Establish acceptance criteria, test and acceptance processes and processes for approval of change requests in line with organisational guidelines 2.3 Establish security, access and management control criteria and quality benchmarks 2.4 Determine necessary audit trails and alerts for variations or non-conformance
3. Establish monitoring mechanisms	3.1 Establish mechanisms to identify software status throughout the software life cycle, or the status of the system or network during upgrading or reconfiguration 3.2 Determine management of records and status reports, including the history of baselines and their links to backups 3.3 Define target audiences and determine the level of detail required in the status reports 3.4 Integrate configuration management into general project management processes for monitoring and control purposes 3.5 Document control and monitoring mechanisms
4. Manage the release of the product to clients	4.1 Determine physical and functional completeness of items prior to release 4.2 Determine requirements for formal control of software products and documentation 4.3 Determine policies for retention of baseline and master copies in line with safety, security and legislative requirements and organisational guidelines

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

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Skill	Performance Criteria	Description
Reading	1.1, 2.1, 2.2, 4.3	• Recognises and interprets legislative, organisational and technical material to determine job requirements
Writing	1.1, 1.2, 2.1-2.3, 3.5, 4.2	• Develops a broad range of materials, such as administrative procedures, for a specific audience using clear and detailed language to convey explicit information, requirements and recommendations
Navigate the world of work	4.3	• Understands own legal rights and responsibilities, and is extending understanding of general legal principles applicable across work contexts
Interact with others	1.3	• Collaborates with others to achieve joint outcomes, playing a lead role in facilitating consensus
Get the work done	1.2-1.4, 2.1-2.4, 3.1- 3.4, 4.1, 4.2	• Develops plans to manage relatively complex, non-routine tasks with an awareness of how they may contribute to longer term operational and strategic goals • Uses formal and informal processes to monitor implementation of solutions • Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world • Uses digital tools to access and organise complex data and analyse multiple sources of information for strategic purposes • Is acutely aware of the importance of understanding, monitoring and controlling access to digitally stored and transmitted information, and reflects on outcomes

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTNWK515 Develop configuration management protocols	ICANWK515A Develop configuration management protocols	Updated to meet Standards for Training Packages	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK515 Develop configuration management protocols

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- develop technical and administrative procedures for use during the software life cycle, system or network reconfiguration or the upgrade process, including:
  - quality processes
  - audit trials
  - version control
  - configuration management procedures.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain benchmarking methodologies
- outline configuration management
- summarise control mechanisms, such as acceptance criteria, test and acceptance processes, and security, access and management control criteria
- explain monitoring mechanisms
- identify and describe standards, benchmarks and organisational guidelines that impact on management protocols
- outline project planning methodologies and tools
- summarise quality assurance and quality processes
- clarify safety, security and legislative requirements
- explain software development methodologies.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the network industry, and include access to:

- Computer aided software engineering (CASE) tools
- future organisational business processes
- organisational standards for documentation and version control
- project budget and timeframe
- project management process and hierarchy
- legislation and organisational guidelines
- technical specifications
- test plans.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK537 Implement secure encryption technologies

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to select, implement and monitor secure file encryption technologies on a computer network or local environment.

It applies to individuals working as network engineers, security analysts, application and software developers as well as systems support administrations in in any size enterprise.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine encryption methods	1.1 Identify enterprise data security needs according to computer network and organisational needs 1.2 Obtain and review available range of encryption technologies and determine options according to computer network and organisational needs 1.3 Plan and document proposed encryption implementation strategy and submit to required personnel 1.4 Seek and respond to proposed encryption plan feedback from required personnel according to organisational needs
2. Carry out encryption	2.1 Implement encryption technology to enterprise system according to vendor specifications 2.2 Analyse and document effect of encryption technologies on

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ELEMENT	PERFORMANCE CRITERIA
	required user roles and responsibilities 2.3 Submit encryption technologies analysis report and inform user impact to required users and organisational personnel
3. Finalise encryption technologies	3.1 Evaluate implementation of encryption technologies according to encryption analysis report 3.2 Determine function and performance of encryption technologies 3.3 Seek user feedback on function and performance of encryption technologies 3.4 Document encryption issues and compromises and submit to organisational help desk support

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Reading	• Interprets and analyses technical data to determine security requirements • Identifies and interprets technical compromises from help desk records
Writing	• Prepares workplace documentation that incorporates an evaluation of technical information using specialised and cohesive language
Teamwork	• Determines the required form, channel and mode of communication for a specific purpose, according to own role
Problem solving	• Uses a combination of formal, logical planning processes and an increasingly intuitive knowledge of context to determine data security threats, risks and countermeasures • Initiates standard procedures when responding to familiar problems to troubleshoot, debug and correct connectivity and security issues
Self-management	• Follows explicit and implicit protocols and meets expectations associated with own role • Demonstrates knowledge of the purposes, specific functions and key features of industry standard digital systems and tools • Operates industry standard digital systems and tools effectively to complete routine tasks
Technology	• Manages and maintains data securely and actively monitors technology, notifying others if security becomes compromised • Operates industry standard digital systems and tools effectively to complete routine tasks

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Unit Mapping Information

Supersedes and is equivalent to ICTNWK502 Implement secure encryption technologies.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK537 Implement secure encryption technologies

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- create and document a security plan for the encryption of at least two applications or solutions.

In the course of the above, the candidate must:

- carry out and evaluate encryption of applications or solutions
- analyse enterprise data security requirements
- determine encryption methods.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard certificate related infrastructure including certificate authorities, registration authorities, repository services
- industry standard symmetric key algorithms and their usage, including:
  - advanced encryption standard (AES), data encryption standard (DES), triple data encryption algorithm (triple DES)
  - Blowfish
- industry standard encryption types, including:
  - public key, secret key, hash key
  - encryption strength
- functions and features of:
  - access control permissions
  - digital signatures and timestamps
  - symmetric encryption, asymmetric encryption and one-way encryption

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- one-way message digests including:
  - message digest algorithm 5 (MD5)
  - secure hash algorithm (SHA)
- public key infrastructure (PKI), pretty good privacy (PGP) and GNU Privacy Guard (GnuPG)
- replay security processes and how to prevent them
- transmission control protocol and internet protocol (TCP/IP) protocols and applications
- wired equivalent privacy (WEP), Wi-Fi protected access (WPA) and Wi-Fi protected access 2 (WPA2).

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a site where encryption installation may be conducted
- a live network
- servers
- industry standard encryption software
- industry standard encryption tools
- organisational security and encryption deliverables.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK538 Install and maintain valid authentication processes

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to design, develop, install and maintain authentication processes and reduce vulnerability of a system.

It applies to individuals working in middle management roles including information security managers, network engineers, security analysts, or similar roles who are responsible for implementing and monitoring an organisational security management system.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Evaluate authentication requirements	1.1 Determine user and organisational security requirements according to organisational security plan 1.2 Identify and analyse authentication options according to user and organisational requirements 1.3 Determine required authentication and authorisation processes according to organisational policies and procedures
2. Configure authentication system	2.1 Create required authentication realm and reuse according to authentication system and organisational requirements 2.2 Add required users and authorisation rules to new realm according to authentication system requirements 2.3 Determine user attributes and user attribute set-up according to

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ELEMENT	PERFORMANCE CRITERIA
	authentication system requirements 2.4 Set up authentication filter and authorisation parameters according to authentication system requirements
3. Apply authentication methods	3.1 Develop and document authentication systems and protocols according to authentication system requirements 3.2 Develop, document and distribute user authentication system responsibilities to required personnel 3.3 Apply authentication system to network and user according to system product and authentication system requirements 3.4 Record and securely store permission and configuration information according to authentication system requirements
4. Monitor authentication system	4.1 Review authentication system according to user security and quality of service requirements 4.2 Determine and document security monitoring, incident management and reporting processes according to organisational security plan 4.3 Submit documentation and respond to feedback from to required personnel 4.4 Seek and respond to feedback from required personnel according to organisational policies and procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Reading	• Interprets and analyses technical data to determine requirements according to user and organisational plans
Writing	• Prepares documentation detailing work performed according to organisational policies and procedures for a specific audience
Planning and organising	• Uses a combination of formal, logical planning processes and an increasingly intuitive knowledge of context to plan control methods and systems processes
Problem solving	• Demonstrates a high-level knowledge of ways in which digital systems and tools are used or could be used to achieve work goals and begins to recognise strategic and operational applications • Uses intuition to identify authentication failure and security incidents and their general problem area • Demonstrates an analytical thought processes to clarify goals and key

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SKILL	DESCRIPTION
	issues and lateral thinking processes to generate possible solutions
Self-management	• Follows explicit and implicit protocols and meets expectations associated with own role • Uses digital technologies and systems safely and securely when implementing and monitoring a system with a growing awareness of the permanence and transparency of all activities

Unit Mapping Information

Supersedes and is equivalent to ICTNWK503 Install and maintain valid authentication processes.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK538 Install and maintain valid authentication processes

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design and deploy authentications solutions to a medium-sized business technology environment.

In the course of the above, the candidate must:

- configure authentication software and tools
- align authentication processes to organisational requirements and industry standard best practices
- document work plans and processes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- problems and challenges associated with organisational authentication issues, including resource accounting through authentication
- industry standard virtual private network (VPN) issues, including:
  - quality of service (QoS) considerations
  - bandwidth
  - dynamic security environment
  - function and operation of VPN concepts
- authentication adaptors, including biometric authentication adaptors
- digital certificates, including:
  - VeriSign
  - X.509
  - SSL

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- function and operation of authentication controls and protocols including:
  - passwords and personal identification numbers (PINs)
  - smart cards biometric devices
- network authentication services including:
  - Kerberos
  - NT LAN Manager (NTLM)
- features of common password protocols, including:
  - challenge handshake authentication protocol (CHAP)
  - challenge phrases
  - password authentication protocol (PAP)
  - remote authentication dial-in user service (RADIUS) authentication
- principles of security tokens.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

- a site or prototype where network authentication may be implemented and managed
- network support tools currently used in industry
- organisational security policies related to authentication
- manufacturers recommendations
- current authentication standards, including biometric authentication adaptors.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK539 Design and implement integrated server solutions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to design and implement network authentication models that allow users to log in using the same user credentials between multiple operating system platforms and that provides a secure method of file sharing on a single, shared network.

It applies to individuals working in network or systems engineering roles, where they are required to support multiple operating systems in a complex computing environment of medium-to-large organisational settings.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to design and install integrated server solution	1.1 Identify server integration requirements according to organisational network requirements 1.2 Determine deployment access requirements and user down times 1.3 Determine required authentication methods and protocols according to organisational network requirements 1.4 Identify additional installation preparation requirements and document preparation details according to organisational network requirements

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ELEMENT	PERFORMANCE CRITERIA
2. Design integrated server solution	2.1 Analyse network operating systems integration and authentication methods according to network authentication model 2.2 Research redundancy and replication requirements for required authentication model 2.3 Design and document integrated server design
3. Install and configure the integrated server solution	3.1 Implement integrated authentication solution according to server design specifications 3.2 Implement integrated file sharing solution according to server design specifications 3.3 Configure required integrated environment on required user workstations 3.4 Implement required integrated server environment security according to server design specifications
4. Test and reconfigure network servers	4.1 Test server performance and document outcomes according to network requirements 4.2 Analyse documented error report and identify system errors 4.3 Diagnose and correct identified integration problems according to network requirements 4.4 Test and validate network server changes and additions against specifications
5. Document and complete network design and installation	5.1 Document server configuration and operational changes 5.2 Complete required documentation report and notification of server status 5.3 Clean up and restore worksite according to organisational requirements

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Numeracy	• Analyses numerical information to take measurements, interpret results and evaluate performance and interoperability of network
Reading	• Interprets and analyses enterprise procedures, manuals and specifications to determine requirements
Writing	• Prepares workplace documentation that incorporates an evaluation of technical information and specialised and cohesive language in a

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SKILL	DESCRIPTION
	format and style required for a specific audience
Teamwork	• Actively identifies the requirements of important communication exchanges, selecting channels, format, tone and content to suit purpose and audience
Planning and organising	• Uses a combination of formal, logical planning processes and an increasingly intuitive knowledge of context to plan, prioritise and monitor own work
Problem solving	• Makes a range of decisions in relatively complex situations, taking a range of constraints into account • Initiates standard procedures and contingency management skills when responding to familiar problems to adapt configuration procedures to requirements of network and reconfigure, depending on differing operational contingencies, risk situations and environments
Self-management	• Demonstrates knowledge of the implications of legal and regulatory responsibilities related to own work
Technology	• Demonstrates knowledge of key principles and concepts underpinning design and operation of digital systems and tools and applies these when troubleshooting existing technology

Unit Mapping Information

Supersedes and is equivalent to ICTNWK504 Design and implement an integrated server solution.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK539 Design and implement integrated server solutions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- install and configure at least two integrated server solutions according to at least two produced integrated server design documents.

In the course of the above, the candidate must:

- produce design documents required to integrate multiple server operating systems for authentication, file sharing and security
- monitor and test the solution
- troubleshoot integration problems
- test and reconfigure network servers.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- authentication methods and protocols, including:
  - lightweight directory access protocol (LDAP)
  - Kerberos
- industry standard network operating systems (NOS), including:
  - operating system help and support utilities
  - network file systems and sharing
- industry standard server applications, compatibility issues and resolution procedures, including:
  - error and event logging and reporting procedures
  - file and print management
  - high availability options for servers

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  - network service configuration and security
- industry standard performance monitoring tools and tuning options
- process of managing a project, including:
  - process or task management
  - task scheduling utilities
- troubleshooting tools and techniques, including network diagnostic utilities
- user authentication and directory services.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a site where server installation may be conducted
- industry standard server specifications including:
  - multiple operating system platforms
  - cabling
- networked (LAN) computers
- server diagnostic software
- switching equipment
- client requirements
- workstations.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK540 Design, build and test network servers

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to design, install and test servers in complex network environments.

It applies to individuals who are employed in network or systems engineering roles or similar and are required to design and build network servers in a complex computing environment of medium-to-large organisations.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan and design network servers	1.1 Identify network server performance and data migration specifications according to organisational requirements 1.2 Design and document configuration of network services and server applications according to organisational requirements 1.3 Prototype design and update documentation 1.4 Develop test plan and confirm alignment according to organisational requirements 1.5 Submit documented plan and obtain sign of from required personnel
2. Prepare for network server	2.1 Identify safety hazards and implement risk control

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ELEMENT	PERFORMANCE CRITERIA
installation	measures according to network design specifications 2.2 Determine network and user disruptions and communicate to required personnel 2.3 Back up local data according to network design specifications
3. Build and configure servers	3.1 Install network operating system according to design specifications 3.2 Install additional tools and required third-party software applications according to network server requirements 3.3 Implement security design and patch operating system and application according to network design specifications 3.4 Configure network services, restore local data and provide automatic updates according to network design specifications 3.5 Implement security design to prevent unauthorised access to system according to network design specifications 3.6 Reconnect and reconfigure connectivity devices according to network server requirements 3.7 Configure update services to provide automatic updates for operating system and applications 3.8 Restore local data to new server 3.9 Implement backup and recovery methods and enable restoration capability in the event of a disaster
4. Test and reconfigure network servers	4.1 Test server and benchmark against network design specifications and document outcomes 4.2 Identify and remediate identified server operating issues according to network design specifications 4.3 Test and validate changes and additions against organisational requirements
5. Complete and document network design and installation process	5.1 Document server configuration, server status and operational changes 5.2 Complete required documentation report and notification of server status 5.3 Clean up and restore worksite according to organisational requirements

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Learning	• Demonstrates knowledge of ways in which digital systems and tools are used or could be used to achieve work goals and begins to recognise strategic and operational applications
Numeracy	• Analyses numerical information to take measurements, interpret results and evaluate performance and interoperability of network • Uses mathematical formulas and calculations to estimate and plan project costs within a defined budget
Reading	• Interprets organisational procedures, manuals and specifications to determine requirements
Writing	• Prepares workplace documentation that incorporates an evaluation of technical information using specialised language in a format and style required for a specific audience
Teamwork	• Determines the required form, channel and mode of communication for a specific purpose, according to own role
Planning and organising	• Uses a combination of formal, logical planning processes and an increasingly intuitive knowledge of context to plan, prioritise and monitor own work
Problem solving	• Uses formal and informal processes to monitor implementation of solutions and reflect on outcomes • Demonstrates effective decision making in relatively complex situations
Self-management	• Demonstrates knowledge of the nature and purpose of own role and associated responsibilities and how it contributes to the work of others • Demonstrates and articulates knowledge of legislation and regulations required to own rights and responsibilities
Technology	• Uses digital technologies and systems safely and securely when implementing and monitoring a system, with a growing awareness of the permanence and transparency of all activities

Unit Mapping Information

Supersedes and is equivalent to ICTNWK505 Design, build and test a network server and ICTTEN514 Install, configure and test a server.

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Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK540 Design, build and test network servers

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- produce a design report for at least one server with complex user and network service requirements
- prepare and install a network server on at least one occasion.

In the course of the above, the candidate must:

- document work plans and processes
- configure a wide range of server network and security services, including:
  - domain name system (DNS)
  - dynamic host configuration protocol (DHCP)
  - web and proxy mail
  - file transfer protocol (FTP)
  - firewall.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- features of industry standard network operating systems (NOS)
- industry standard server applications compatibility issues and resolution procedures
- industry standard network service configuration, including:
  - domain name system (DNS)
  - dynamic host configuration protocol (DHCP)
  - file transfer protocol (FTP)
  - mail
  - network time protocol (NTP)

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  - proxy
  - server messages block (SMB)
  - web
- industry standard network service management including start, stop, restart and start on boot
- network service security features, including server firewall configuration
- troubleshooting tools and techniques including network diagnostic utilities
- industry standard operating system installation and operation issues, including:
  - installation media
  - boot process and diagnosing boot failures
  - operating system rescue environment
  - operating system help and support utilities
  - performance monitoring tools and tuning options
  - compatibility issues and resolution procedures
  - high availability options for servers
  - file and print management
- data security and storage measures required on networked server, including:
  - user authentication and directory services
  - best practice procedures for implementing backup and recovery
  - error and event logging and reporting
  - storage options, including file systems and disk partitioning schemes.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a site where server installation may be conducted
- server specifications
- industry standard hardware
- networked (LAN) computers
- server diagnostic software
- switching equipment
- organisational deliverables relating to building network servers
- wide area network (WAN) service point of presence
- end user device.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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ICTNWK541 Configure, verify and troubleshoot WAN links and IP services

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to use required tools, equipment, software and protocols to install, operate and troubleshoot switches and routers in a medium-size enterprise network.

It applies to individuals who are employed in desk technician and network support technician roles.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to install medium enterprise Wide Area Network (WAN) links	1.1 Review existing network design documentation and determine currency and completeness according to organisational requirements 1.2 Analyse organisational security protocol requirements 1.3 Determine access and security requirements of required tools, equipment, software 1.4 Develop and document installation plans and detail prioritised tasks and contingency arrangements according to organisational requirements 1.5 Obtain installation plan sign off from required

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ELEMENT	PERFORMANCE CRITERIA
	personnel
2. Configure WAN links	2.1 Determine WAN connection method requirements according to installation plan specifications 2.2 Configure and verify required serial WAN configuration and WAN protocols according to vendor specifications 2.3 Configure required virtual private network (VPN) and site-to-site technology according to vendor specifications 2.4 Determine and configure an asymmetric digital subscriber line (ADSL) connection according to installation plan specifications
3. Configure and verify IP services on a router	3.1 Configure, implement and verify a Dynamic Host Configuration Protocol (DHCP) router operation according to vendor specifications 3.2 Configure and verify internet protocol version 6 (IPv6) addressing according to vendor specifications 3.3 Configure and verify the operation of network address translation (NAT) requirements according to installation plan specifications
4. Secure a network using router services	4.1 Determine purpose and types of access control lists (ACLs) according to installation plan specifications 4.2 Configure and apply ACLs according to network filtering requirements 4.3 Secure access to the network router according to installation plan specifications
5. Troubleshoot medium enterprise WAN links	5.1 Test WAN implementation links and align to installation plan service expectations 5.2 Respond and rectify identified WAN implementation issues 5.3 Document test results and rectification methods according to installation plan specifications 5.4 Seek and respond to feedback from required personnel

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION

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SKILL	DESCRIPTION
Numeracy	• Analyses numerical information to take measurements, interpret results and evaluate performance and interoperability of network
Oral communication	• Uses listening and questioning techniques to confirm requirements, articulate complex concepts and matters using required terminology to explain technical and business-related matters with required personnel
Reading	• Interprets and analyses technical information to determine requirements according to organisational needs
Writing	• Prepares workplace documentation which incorporates an evaluation of technical information and specialised language in a format and style for a specific audience
Planning and organising	• Uses a combination of formal, logical planning processes and an increasingly intuitive knowledge of context to plan, prioritise and monitor own work
Problem solving	• Demonstrates effective decision making for relatively complex situations and takes a range of factors into consideration • Uses intuition to identify the general problem area, switching to analytical processes to clarify goals and key issues and lateral thinking processes to generate possible solutions
Self-management	• Demonstrates knowledge of the implications of legal and regulatory responsibilities related to own work • Demonstrates knowledge of how strategic and operational applications are used or could be used to achieve work goals
Technology	• Demonstrates knowledge of the ways in which digital systems and tools are used or could be used to achieve work goals • Uses digital technologies and systems safely and securely when implementing and monitoring a system, with a growing awareness of the permanence and transparency of all activities

Unit Mapping Information

Supersedes and is equivalent to ICTNWK506 Configure, verify and troubleshoot WAN links and IP services in a medium enterprise network.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK541 Configure, verify and troubleshoot WAN links and IP services

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- install, configure and test Wide Area Networks (WAN) links on at least two occasions.

In the course of the above, the candidate must:

- plan and prepare for WAN link installation
- document finalised solutions for WAN links
- secure access to network router through access control lists.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard operation and configuration of internet protocol version 6 (IPv6)
- industry standard router setup and operations, including:
  - ACLs
  - router command line interface (CLI) configuration
  - router debug commands
- industry standard problems and solutions with WAN link installations.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

- a site where network installation may be conducted
- small enterprise routers and switches
- network’s design documentation

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- equipment specifications
- hardware and software required to install and operate small enterprise branch networks
- end user device
- policies and procedures pertaining to the installation and operation of a network.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK542 Install, operate and troubleshoot medium enterprise routers

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to use tools, equipment, software and protocols to install, operate and troubleshoot medium enterprise routers.

It applies to individuals working as network technicians and network administrators or in other network support roles.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to install router	1.1 Identify and analyse existing router performance against organisational requirements 1.2 Review existing network design documentation and determine alignment to organisational requirements 1.3 Determine network element additions and upgrades according to organisational requirements 1.4 Develop and document installation plan and submit document to required personnel 1.5 Obtain installation plan sign off from required personnel
2. Configure basic	2.1 Determine basic routing requirements and operating parameters

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ELEMENT	PERFORMANCE CRITERIA
router operation	according to installation plan specifications 2.2 Select required media, cables, ports, connectors and connect routers to network devices and hosts according to installation plan specifications 2.3 Set basic parameters and router firmware according to installation plan specifications 2.4 Save and back up router configuration files according to installation plan specifications 2.5 Implement required router security and configure static and default routes according to installation plan specifications
3. Configure dynamic classless routing protocols	3.1 Calculate and apply required classless IP addressing scheme using variable length subnet mapping (VLSM) to a local area network (LAN) and a wide area network (WAN) environment according to router specifications 3.2 Configure and verify required classless routing protocols according to router specifications
4. Apply troubleshooting processes	4.1 Troubleshoot device configuration and network connectivity according to network specifications 4.2 Identify and correct problems with IP addressing and host configurations according to network specifications 4.3 Seek and respond to feedback from required personnel

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Learning	• Reflects on the ways in which digital systems and tools are, or could be, used to achieve work goals and have strategic and operational applications
Numeracy	• Analyses numerical information to take measurements, interpret results and evaluate the performance and interoperability of the network • Adds, subtracts, multiples and divides basic and complex numbers
Reading	• Gathers, interprets and analyses technical and regulatory information, to determine the requirements according to client needs
Writing	• Uses factual information and industry-related terminology, to convey information to internal and external personnel on technical, operational and business-related matters

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SKILL	DESCRIPTION
Planning and organising	• Uses a combination of formal, logical planning processes, intuitive knowledge of context to plan, prioritise and monitor own work and coordinate processes, in liaison with others
Problem solving	• Identifies the implications of legal and regulatory responsibilities related to own work • Demonstrates a use of intuition to identify the general problem area, switching to analytical processes to clarify goals and key issues and uses lateral thinking processes to generate possible solutions
Self-management	• Makes decisions in relatively complex situations, taking a range of factors into consideration
Technology	• Uses digital technologies and systems safely and securely, when implementing and monitoring a system, with a growing awareness of the permanence and transparency of all activities

Unit Mapping Information

Supersedes and is equivalent to ICTNWK507 Install, operate and troubleshoot medium enterprise routers.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK542 Install, operate and troubleshoot medium enterprise routers

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- configure, install, manage and troubleshoot on medium enterprise routers on at least two occasions.

In the course of the above, the candidate must:

- apply network topologies, routing and security protocols.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard routing concepts for medium enterprise network switches and routers
- classless routing protocols, including:
  - open shortest path first (OSPF)
  - routing information protocol (RIPv2)
- debug commands
- internet protocol version 4 (IPv4)
- purpose and basic operation of protocols in the open system interconnection (OSI) and transmission control protocol and internet protocol (TCP/IP) models
- router command line interface (CLI) configuration.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

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- a site where network installation may be conducted
- small enterprise routers and switches
- network’s design documentation
- equipment specifications
- hardware and software required to install and operate small enterprise branch networks
- end user device
- policies and procedures pertaining to the installation and operation of a routers.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK543 Install, operate and troubleshoot medium enterprise switches

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to use tools, equipment, software and protocols to install, operate and troubleshoot medium enterprise switches and routers.

It applies to individuals working as help desk technicians, network support technicians or in similar roles.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to install medium enterprise switch and router	1.1 Identify and analyse existing switch and router performance against manufacturer expectations and organisational requirements 1.2 Review existing network design documentation and determine alignment to manufacturer expectations and organisational requirements 1.3 Determine network element additions and upgrades according to organisational requirements 1.4 Develop and document installation plan and submit to required personnel 1.5 Obtain installation plan sign off from required personnel

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ELEMENT	PERFORMANCE CRITERIA
2. Configure basic switch operation	2.1 Determine network segmentation, traffic management and switching requirements according to installation plan specifications 2.2 Perform, save and verify initial switch configuration tasks according to installation plan specifications 2.3 Select required media, cables, ports and connectors and connect switches to network devices and hosts 2.4 Perform, save and verify initial switch configuration tasks and upgrade switch firmware 2.5 Save and back up switch configuration files and implement required switch security
3. Configure and verify advanced switching functions	3.1 Determine required switching technologies according to switch specifications 3.2 Configure and verify virtual local area networks (VLANs) 3.3 Configure and verify required trunks between switches and inter-VLAN routing 3.4 Configure and verify required spanning tree protocol (STP) operations
4. Troubleshoot medium enterprise switches	4.1 Troubleshoot device configuration and network connectivity according to switch specifications 4.2 Identify and resolve switched network issues according to technical requirements 4.3 Seek and respond to feedback from required personnel

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Learning	• Identifies implications of legal and regulatory responsibilities related to own work • Reflects on the ways in which digital systems and tools are used or could be used to achieve work goals and have strategic and operational applications
Numeracy	• Analyses numerical information to take measurements, interpret results and evaluate performance and interoperability of network
Reading	• Gathers, interprets and analyses technical and regulatory information to determine requirements according to client needs

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SKILL	DESCRIPTION
Writing	• Uses factual information and industry-related terminology to convey information to internal and external personnel on technical, operational and business-related matters
Planning and organising	• Uses a combination of formal, logical planning processes to plan, prioritise and monitor own work and coordinate processes in liaison with others and within different contexts
Problem solving	• Makes decisions in relatively complex situations, taking a range of factors into consideration • May use intuition to identify general problem areas from complex issues, switching to analytical processes to clarify goals and key issues and uses lateral thinking processes to generate possible solutions
Technology	• Uses digital technologies and systems safely and securely when implementing and monitoring a system with a growing awareness of the permanence and transparency of all activities

Unit Mapping Information

Supersedes and is equivalent to ICTNWK508 Install, operate and troubleshoot medium enterprise switches.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK543 Install, operate and troubleshoot medium enterprise switches

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- prepare and install at least two medium enterprise switches
- configure and test network elements on at least two occasions.

In the course of the above, the candidate must:

- apply network topologies, protocols and security issues
- apply solutions and troubleshoot defined network problems.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- switches and their operation
- industry standard installation requirements of switches, including:
  - debug commands
  - routing between virtual local area networks (VLANs)
  - spanning tree protocol (STP)
  - switch command line interface (CLI) commands
  - switch security, including:
    - port deactivation
    - port security
    - secure shell (SSH)
  - advanced switching technologies
  - common network switching issues
- industry standard network and related equipment.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a site where network installation may be conducted
- enterprise switches and operating systems
- equipment specifications
- hardware and software required to install and operate medium enterprise switches
- end user device
- policies and procedures pertaining to the installation and operation of enterprise switches.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK544 Design and implement a security perimeter for ICT networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.
Release 2	Correcting an error in Performance Criteria 3.3.

Application

This unit describes the skills and knowledge required to build a high performance, high security, failure resistant security perimeter for an enterprise Information and Communications Technology (ICT) network.

It applies to individuals with advanced ICT expertise and work in roles including middle managers, information security managers, network engineers, network technicians, security analysts or similar.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan and design firewall solution	1.1 Identify organisational and industry standard security threats according to organisational policies and procedures 1.2 Determine required firewall security according to organisational requirements 1.3 Research and identify available perimeter security options according to organisational requirements 1.4 Design security perimeter according to organisational

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ELEMENT	PERFORMANCE CRITERIA
	requirements
2. Configure perimeter to secure network	2.1 Deploy required perimeter devices according to network security requirements 2.2 Configure required perimeter topology according to network security requirements 2.3 Configure basic functionality of devices according to network security requirements 2.4 Configure required advanced functions according to network security requirements
3. Design and configure network devices	3.1 Back up device configuration according to network security requirements 3.2 Design and configure perimeter and enable continuity of service during devices upgrades 3.3 Design and configure perimeter and enable continuity of service in event of device failure
4. Configure VPN solution	4.1 Configure perimeter for site-to-site virtual private networks (VPNs) 4.2 Configure perimeter as a remote access VPN server 4.3 Configure perimeter to allow VPN tunnel forwarding 4.4 Diagnose and resolve VPN connectivity issues according to network security requirements
5. Test design performance	5.1 Test required functionality of basic features according to network security requirements 5.2 Test required functionality of advanced features according to network security requirements 5.3 Perform required penetration testing and verify perimeter against security requirements 5.4 Document functionality performance results and submit to required personnel

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Numeracy	• Selects from and applies an expanding range of mathematical and problem-solving strategies to design and configure advanced features of perimeter devices and an integrated VPN solution

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SKILL	DESCRIPTION
Reading	• Gathers, interprets and analyses technical and enterprise information to determine requirements according to client needs
Writing	• Uses factual information and industry related terminology to convey complex technical information and notes security breaches for client records to clients on technical, operational and business-related matters
Planning and organising	• Uses a combination of formal, logical planning processes to plan, prioritise and monitor own work and coordinate processes in liaison with others and within different contexts
Problem solving	• Makes decisions in relatively complex situations, taking a range of factors into consideration • May use intuition to identify general problem areas from complex issues and switching to analytical processes to meet security requirements and resolve other technical problems
Self-management	• Identifies digital systems and tools are used or could be used to achieve work goals and begins to recognise strategic and operational applications
Technology	• Uses digital technologies and systems safely and securely when implementing and monitoring a system, with a growing awareness of the permanence and transparency of all activities

Unit Mapping Information

Supersedes and is equivalent to ICTNWK509 Design and implement a security perimeter for ICT networks.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK544 Design and implement a security perimeter for ICT networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.
Release 2	Correcting an error in Performance Criteria 3.3.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design, configure and test a security perimeter and integrated VPN solution on network devices on at least one occasion.

In the course of the above, the candidate must:

- design and configure a firewall solution and network devices
- conduct testing of the performance of the perimeter of security devices
- document functionality performance results and the finalised process.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard emerging security issues and the requirement for security policies
- industry standard security perimeter issues related to networks, including:
  - security technologies according to perimeter design
  - weaknesses of installed perimeter design
- principles and techniques for designing and implementing a security perimeter, including:
  - software and hardware perimeter solutions
  - organisational network infrastructure
  - auditing and penetration testing techniques
  - logging analysis techniques.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- site or prototype where perimeter security may be implemented and managed
- perimeter devices
- organisational security requirements.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK545 Develop, implement and evaluate systems and applications security

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to develop, implement and evaluate information security in an Information and Communications Technology (ICT) system or application during the system development life cycle (SDLC) and prior to the operations and maintenance phase.

It applies to individuals who work as network managers and required to handle system and application security from the development phase through implementation to evaluation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Develop system and application security	1.1 Identify organisational ICT system and application security requirements 1.2 Determine and document ICT system and application security plan according to organisational requirements 1.3 Identify risk-based audit performance criteria against the ICT system or application 1.4 Develop and document required mitigation of vulnerabilities processes and procedures 1.5 Integrate information security requirements, controls,

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ELEMENT	PERFORMANCE CRITERIA
	processes and procedures into ICT system and application design specifications
2. Implement system and application security	2.1 Execute and verify operational compliance according to technical and organisational requirements 2.2 Perform required configuration management practices and mitigate introduction of vulnerabilities 2.3 Validate and re-engineer ICT system and application security controls and operations phase vulnerabilities 2.4 Document ICT system and application security controls according to organisational policies and procedures
3. Evaluate system and application security	3.1 Assess effectiveness of information system controls against required risk management practices and procedures 3.2 Assess and evaluate system compliance against organisational requirements 3.3 Assess system maturation and readiness for promotion to production stage according to organisational requirements 3.4 Document assessment findings and submit to required personnel

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Reading	• Gathers, interprets and analyses technical and regulatory information to determine requirements according to client needs
Writing	• Uses factual information and industry related terminology to produce workplace documents
Planning and organising	• Uses a combination of formal, logical planning processes to plan, prioritise and monitor own work and coordinate processes in liaison with others and within different contexts
Problem solving	• Identifies sophisticated principles, concepts, nuance, language and practices associated with the digital world and uses these to troubleshoot and reduce risks • Uses digital tools to access and organise complex data and analyse multiple sources of information for strategic purpose • Makes a range of critical decisions in relatively complex situations, taking a range of constraints into account

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SKILL	DESCRIPTION
Self-management	• Identifies and considers required policies and legislative requirements in the development of system security processes
Technology	• Monitors and controls access to digitally stored and transmitted information

Unit Mapping Information

Supersedes and is equivalent to ICTNWK510 Develop, implement and evaluate system and application security.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK545 Develop, implement and evaluate systems and applications security

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- create and implement an Information and Communications Technology (ICT) system and application security plan on at least one occasion.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard programming languages
- industry standard best practices in application of language syntax rules, including:
  - data structures
  - graphical user interfaces (GUIs)
  - small-size application development
- legislation, regulations and codes of practice that impact on network security
- threats and risks to the security environment
- security assurance specifications
- risk assessment process required in evaluating system vulnerabilities, including:
  - risk mitigation
  - security control selection
  - implementation and evaluation process
  - software security standards compliance.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

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- ICT business specifications
- information on security environment, including:
  - laws and legislation
  - existing organisational security policies
  - organisational expertise and knowledge
- application and system scenarios.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK546 Manage network security

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to implement and manage security functions throughout a network.

It applies to individuals with Information and Communications Technology (ICT) expertise and lead the development of strategic reviews of security and provide technical advice, guidance and leadership in resolution of specified problems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan security design process	1.1 Define planning phase for network security design according to organisational requirements 1.2 Define building phase for network security design according to organisational requirements 1.3 Define managing phase for network security design according to organisational requirements
2. Identify threats to network security	2.1 Determine major threat themes to network security 2.2 Determine the potential origin of major threats according to network security design specifications 2.3 Identify industry standard common network vulnerability types

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ELEMENT	PERFORMANCE CRITERIA
	2.4 Design and document threat model according to network security design specifications
3. Analyse security risks	3.1 Determine required elements of risk management according to network security design specifications 3.2 Identify organisational assets requiring protection 3.3 Categorise and document assets and determine their value according to organisational requirements 3.4 Determine and document risk management plan according to organisational requirements
4. Create a security design	4.1 Determine attacker scenarios and threats according to network security design specifications 4.2 Design and document network components security measures 4.3 Develop and document security policies 4.4 Submit document to required personnel and seek and respond to feedback
5. Design security incidents response	5.1 Design and document auditing and incidents response procedure 5.2 Submit to required personnel, seek and respond to feedback

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Numeracy	• Calculates equipment costs in order to assess their business-related value
Oral communication	• Uses active listening, observational and questioning techniques in order to identify different perspectives and confirm and clarify knowledge
Writing	• Uses factual information and industry related terminology to develop organisational plans, security policies and document security breaches
Problem solving	• Identifies and applies complex principles, concepts, language and practices associated with the digital world and uses these to troubleshoot and reduce risks • Uses digital tools to access and organise complex data and analyse multiple sources of information for strategic purposes

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Unit Mapping Information

Supersedes and is equivalent to ICTNWK511 Manage network security and ICTTEN811 Evaluate and apply network security.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK546 Manage network security

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- evaluate security information and use it to plan control methods and countermeasures to manage prescribed network security requirements on at least one occasion.

In the course of the above, the candidate must:

- document plans, policies and processes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard ICT networks and their configuration
- network attacks, vulnerabilities and related weaknesses of installed infrastructure, including:
  - security technologies
  - emerging security issues
- network security measures, including:
  - auditing and penetration testing techniques
  - logging analysis techniques
  - organisational network infrastructure
  - capabilities of software and hardware solutions
  - general features of emerging security policies, with depth in security procedures
  - network management and security process controls
- network security implementation risk management plans and procedures, including:
  - network security planning
  - implementation

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- cost analysis and budgeting.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a site or prototype where network security may be implemented and managed
- network support tools currently used in industry
- organisational security policies, manufacturer recommendations and security standards.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK547 Manage system security on operational systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to implement and manage security on an operational system.

It applies to individuals working in middle management or leadership roles and are responsible for implementing and managing the organisations security management system.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Analyse threats to system	1.1 Evaluate network security system and determine the level of alignment to organisational requirements 1.2 Conduct risk analysis on network security system and document outcomes 1.3 Identify and evaluate system threats and document findings according to organisational requirements 1.4 Identify and document system user interactions
2. Determine risk category	2.1 Conduct risk assessment on network security system and categorise risks 2.2 Conduct risk assessment on human operations and interactions with network security system and categorise risks 2.3 Match risk plans to risk categories according to risk

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ELEMENT	PERFORMANCE CRITERIA
	assessment levels 2.4 Determine and plan resources by risk categories according to risk assessment levels
3. Identify required controls	3.1 Devise and implement risk management controls according to system security requirements 3.2 Plan and document required system-related user policies and procedures 3.3 Identify high-risk categories at specified periods according to risk assessment levels 3.4 Categorise and record system breakdowns according to organisational requirements
4. Implement controls in the system	4.1 Develop a management system security plan according to risk assessment levels and system security requirements 4.2 Develop security recovery plan according to risk assessment levels and system security requirements 4.3 Implement system controls and reduce risks in human interaction with the system
5. Monitor system tools and procedures	5.1 Conduct a management review process and monitor risks 5.2 Review risk analysis process against security vendor benchmarks, security specialists and organisational requirements 5.3 Determine and document re-evaluation system to identify new threats and risks 5.4 Submit all documentation to required personnel, and seek and respond to feedback

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Learning	• Demonstrates an increasing capacity to manipulate oral, visual and or written formats to achieve a specific purpose with full command of vocabulary required to context
Reading	• Gathers, interprets and analyses technical and enterprise information to determine requirements according to client needs
Writing	• Prepares information that incorporates a synthesis of knowledge, using Information and Communications Technology (ICT) terminology and cohesive language in a format and style required to a

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SKILL	DESCRIPTION
	specific audience
Teamwork	• Recognises and addresses complex problems involving participation in group solutions and analysis and resolving issues for a mixed mode environment of people and systems processes
Planning and organising	• Uses digital tools to access and organise complex data and analyse multiple sources of information for strategic purposes • Uses a combination of formal and logical planning processes and an increasingly intuitive knowledge of context to develop a security plan and a security recovery plan
Problem solving	• Identifies and applies complex principles, concepts, language and practices associated with the digital world and uses these to troubleshoot and reduce risks • Makes a range of critical decisions in relatively complex situations, taking a range of constraints into account
Self-management	• Takes full responsibility for identifying and considering required policies and procedures when managing a security system • Monitors and controls access to digitally stored and transmitted information

Unit Mapping Information

Supersedes and is equivalent to ICTNWK513 Manage system security.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK547 Manage system security on operational systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- conduct a network security system evaluation on at least one occasion
- develop a security plan and security recovery plan on at least one occasion
- implement controls within the security system on at least one occasion.

In the course of the above, the candidate must:

- implement and manage security functions on a system
- conduct a risk assessment
- set up effective controls to manage risk
- monitor risks and controls
- review risk analysis process
- document finalised plans.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard security technologies
- industry standard risk analysis procedures, including:
  - general features and
  - security procedures
- security requirements of an organisation, including:
  - industry standard threats to security
  - security techniques and technologies
- systems management and process control in relation to security
- industry standard systems technologies, including their general features and capabilities.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a site where system security may be implemented and managed
- use of utility tools currently used in industry
- organisational security policies
- manufacturer recommendations
- security standards.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK548 Model preferred system solutions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to fit a physical model into the design phase of the methodology.

It applies to individuals working as system designers or similar and are required to model proposed solutions.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Review and confirm system requirements	1.1 Determine and clarify organisation's required system solutions with required personnel 1.2 Identify organisational standards and methods for developing models 1.3 Identify assumptions and incorporate into modelling process 1.4 Identify goals and resolve into task requirements 1.5 Determine and document task plan according to organisational policies and procedures
2. Resolve conflicts and inconsistencies	2.1 Identify missed opportunities arising from previous and current model development 2.2 Identify bottlenecks, overlooked functionalities and other

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ELEMENT	PERFORMANCE CRITERIA
	required issues 2.3 Determine and document resolution process according to organisational policies and procedures
3. Build and test model	3.1 Develop and document model plan and implement existing architecture 3.2 Submit documented plan to required personnel 3.3 Seek and respond to plan feedback from required personnel 3.4 Test model against test plan specifications 3.5 Document test data and confirm that test procedures validate performance of model
4. Finalise workable solution	4.1 Confirm consensus views of key information and communications technology (ICT) stakeholders is represented in model 4.2 Submit model to required ICT stakeholders for review and to confirm common knowledge of model and proposed solution 4.3 Submit model to required person for sign-off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Learning	• Uses a combination of formal and logical planning processes and an increasingly intuitive knowledge of context to set benchmarks and identify project scope when developing a model
Reading	• Interprets technical material and organisational standards to determine job requirements
Writing	• Develops material for a specific audience, using clear and detailed language to convey explicit information, requirements and recommendations
Teamwork	• Identifies the requirements of important communication exchanges, selecting required channels, format, tone and content to suit purpose and audience
Problem solving	• Identifies and applies complex principles, concepts, language and practices associated with the digital world • Uses digital tools to access and organise complex data and analyse multiple sources of information for strategic purposes • Makes a range of critical decisions in relatively complex situations,

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SKILL	DESCRIPTION
	taking a range of constraints into account • Identifies and addresses complex problems in systems models and may seek advice from required experts
Self-management	• Takes full responsibility for identifying and considering required policies and requirements in the development of preferred system solutions • Monitors and controls access to digitally stored and transmitted information

Unit Mapping Information

Supersedes and is equivalent to ICTNWK514 Model preferred system solutions.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK548 Model preferred system solutions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify and resolve model conflicts and build a model using at least two development tools and test on at least one occasion.

In the course of the above, the candidate must:

- document finalised plan
- analyse organisation's required outcomes
- develop specific areas of a system for further information or to confirm a software or hardware direction
- identify opportunities for expansion of the model.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- organisational business domain in relation to the organisational structure
- functions and features of:
  - development and test tools
  - industry standard hardware and software products and standards
- industry standard explain modelling techniques
- systems development methodologies.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

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- acceptance criteria
- client requirements
- organisational and process goals
- project budget
- project deliverables
- standards for model development
- technical specifications
- test plans.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK549 Design ICT security frameworks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to evaluate Information and Communications Technology (ICT) security requirements for a new system and to plan for controls and contingencies.

It applies to individuals working in senior roles in the networking area who are required to design security for new ICT systems or similar.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Research ICT security requirements	1.1 Analyse and determine statutory, commercial and application security requirements 1.2 Assess impact on the existing ICT system 1.3 Identify additional ICT security requirements 1.4 Document security requirements and submit for approval from required personnel
2. Conduct risk analysis	2.1 Identify internal and external security threats according to organisational security requirements 2.2 Develop security alleviation controls and contingencies according to organisational security requirements 2.3 Determine costs and additional resource requirements

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ELEMENT	PERFORMANCE CRITERIA
	associated with contingencies 2.4 Conduct and document risk assessment recommendations 2.5 Submit to required personnel for feedback
3. Develop ICT security policy and operational procedures	3.1 Develop security policies and align to organisational security strategy 3.2 Create and document work procedures and align to organisational security policies 3.3 Document operating procedures 3.4 Submit all documentation to required personnel for feedback

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Learning	• Demonstrate operation from a broad conceptual plan, developing the operational detail in stages and regularly reviewing priorities and performance
Numeracy	• Interprets numerical data to develop a broad plan, budget and strategy
Oral communication	• Uses listening and questioning skills to confirm knowledge for requirements and articulates information clearly and concisely
Reading	• Demonstrates knowledge and knowledge of legislative, organisational and technical material to determine job requirements
Writing	• Develops a broad range of procedural material for a specific audience, using clear and detailed language to convey explicit information, requirements and recommendations
Teamwork	• Identifies the requirements of important communication exchanges, selecting required channels, format, tone and content to suit purpose and audience
Problem solving	• Identifies and applies complex principles, concepts, language and practices associated with the digital world
Self-management	• Identifies and applies complex own legal rights and responsibilities and understands general legal principles applicable across work contexts • Takes responsibility for high-impact decisions in complex situations

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SKILL	DESCRIPTION
	involving many variables and constraints • Recognises complex anomalies and subtle deviations to normal expectations, focussing attention on critical issues and variables
Technology	• Uses digital technologies and systems safely and legally when gathering, storing, accessing and sharing information, with a growing awareness of the permanence and transparency of all activities

•
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Unit Mapping Information

Supersedes and is equivalent to ICTNWK519 Design an ICT security framework.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK549 Design ICT security frameworks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- determine and develop security policies and operating procedures on at least one occasion.

In the course of the above, the candidate must:

- conduct risk analysis
- analyse and identify organisation's security requirements
- research and assess security framework requirements with consideration of statutory and commercial requirements
- identify associated costs.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard design criteria for a security framework, including:
  - organisation's business domain
  - legislation relating to Information and Communications Technology (ICT) security
  - current industry standard hardware
  - current industry standard software products
  - industry standard security features and capabilities
  - operating systems
  - risk relating to ICT security
- industry standard security considerations for businesses, including:
  - typical environments
  - threats
  - policies and strategies.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- information on the security environment
- laws and legislation relevant to ICT security
- existing organisational security policies
- security environment, which also includes the threats to security that are, or are held to be, present in the environment
- risk analysis tools.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK550 Design ICT system security controls

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to design the security controls that confirm that an Information and Communications Technology (ICT) system is both physically and legally secure.

It applies to individuals in a range of ICT areas who are required to guarantee the security of ICT systems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Review organisational security policy and procedures	1.1 Analyse business environment and identify organisational system security controls requirements 1.2 Determine legislative requirement for ICT security and impact on organisational requirements 1.3 Identify organisational ICT security threats 1.4 Document analysis findings and security requirements and submit to required personnel for approval 1.5 Seek and respond to feedback from required personnel as required
2. Develop security plan	2.1 Identify potential security attacks, threats and risks

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Prioritise, categorise and document assessment results 2.3 Determine and document security plan according to organisational requirements 2.4 Submit plan to required personnel and seek feedback 2.5 Integrate approved changes into security plan and confirm compliance with statutory requirements
3. Implement system controls	3.1 Implement security controls according to security plan and confirm minimum risk of security breaches 3.2 Monitor each phase of implementation and determine organisational impact 3.3 Document implementation process according to organisational requirements 3.4 Plan risk assessment review process according to organisational requirements

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Oral communication	• Uses listening and questioning skills to confirm requirements, articulate and present complex concepts and matters using required terminology for intended audience
Reading	• Interprets legislative, organisational and technical material to determine job requirements
Writing	• Develops a broad range of business reports for a specific audience, using clear and detailed language to convey explicit information, requirements and recommendations
Planning and organising	• Operates from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation and identifying and addressing issues
Problem solving	• Monitors outcomes of decisions, considering results from a range of perspectives and identifying key concepts and principles that may be adaptable in the future
Self-management	• Identifies and applies complex legislative or regulatory requirements required to own role and considers implications of any changes when planning and undertaking work
Technology	• Identifies and applies complex principles, concepts, language and

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SKILL	DESCRIPTION
	practices associated with the digital world • Monitors and controls access to digitally stored and transmitted information

Unit Mapping Information

Supersedes and is equivalent to ICTNWK520 Design ICT system security controls.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK550 Design ICT system security controls

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- review organisations existing security policies and procedures and design and document security procedures and controls for a system on at least one occasion.

In the course of the above, the candidate must:

- oversee the implementation and evaluation of the strategy.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- communications security, including human organisational interactions
- procedures for conducting information security risk assessments
- internet security technologies and processes, including:
  - firewalls
  - physical security
  - security testing methods for performing security tests
  - wireless security
  - security threats
  - the impact of security policies, plans and strategies
  - general features of specific security technology
  - risk assessment
- current industry standard security processes, including general features and capabilities of software and hardware solutions
- legislative requirements and ethical standards expected when considering security controls, including:

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- ethics in Information and Communications Technology (ICT)
- privacy issues.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- ICT security assurance specifications
- probability, frequency and severity of direct and indirect harm, loss or misuse of the ICT system
- risk analysis tools and methodologies
- an ICT environment in which there are security risks
- legislation, regulations and standards relating to security
- existing organisational security policies.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK551 Build decks using wireless markup language

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to create wireless markup language (WML) decks.

It applies to individuals who create specialised language intended for devices such as mobile phones that implement the Wireless Application Protocol (WAP) specification that provides navigational support, data input, hyperlinks, text and image presentation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Design WML deck	1.1 Analyse existing hypertext markup language (HTML) page design and identify information accessible via hand-held device 1.2 Design deck logical structure and confirm deck size meets required boundaries 1.3 Determine content structure according to organisational requirements and user needs 1.4 Identify links between sets of cards according to WML deck requirements
2. Create deck	2.1 Design user input cards and multiple item selection according to WML design specifications 2.2 Code deck cards according to WML design specifications

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ELEMENT	PERFORMANCE CRITERIA
	2.3 Demonstrate cards compliance to international WML standards
3. Test deck	3.1 Test deck on multiple devices and confirm compatibility with required hand-held devices 3.2 Validate and test WML files according to standard testing procedures 3.3 Document test results and submit to required personnel

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Learning	• Monitors outcomes of decisions, considering results and identifying key concepts and principles that may be adaptable in the future
Oral communication	• Uses listening and questioning techniques to confirm requirements and participates in a verbal exchange of ideas, feedback and solutions
Reading	• Interprets technical material to determine and confirm job requirements
Writing	• Demonstrates sophisticated writing skills using specialised language, stylistic devices and required conventions to express precise meaning
Planning and organising	• Operates from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation and identifying and addressing issues
Problem solving	• Recognises anomalies and subtle deviations to normal expectations, focussing attention and remedying problems as they arise
Self-management	• Demonstrates adherence to explicit and implicit protocols within familiar work contexts
Technology	• Identifies and applies complex principles, concepts, language and practices associated with the digital world

Unit Mapping Information

Supersedes and is equivalent to ICTNWK522 Build decks using wireless markup language.

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Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK551 Build decks using wireless markup language

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design wireless markup language (WML) files and build and test a deck on at least one occasion.

In the course of the above, the candidate must:

- analyse existing parameters
- create code using required language and standards
- test and validate compatibility and performance.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard internet standards and transmission control protocols and internet protocols (TCPs/IPs) required to WML
- five-layer protocol stack of TCP/IP and its function in applications development
- wireless application protocol (WAP)
- application communication protocols
- WML code, including:
  - WMLScript and WMLScript specification
  - extensible markup language (XML) 1.0 standard
  - XML applications
- wireless features:
  - application environment
  - datagram, session, transaction protocol
  - transport layer security

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- computer code of ethics as it applies to programming.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

- This includes access to:
- XML parser
- WML valuator
- industry standard hardware and software.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK552 Install and configure network access storage devices

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to select, install and test a network access storage (NAS) device in a local area network (LAN).

It applies to individuals who work in roles that involve installing, configuring and testing NAS devices in the workplace environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine NAS specifications	1.1 Determine and document topology of local area network (LAN) according to organisational requirements 1.2 Determine current and future organisational storage requirements 1.3 Determine number and type of required NAS devices according to organisational requirements 1.4 Determine requirements for network management, backup, security and redundancy
2. Select hardware and software	2.1 Select required hardware according to organisational requirements and technical specifications 2.2 Select required operating system software version according to organisational requirements and technical specifications

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ELEMENT	PERFORMANCE CRITERIA
	2.3 Select required storage applications according to technical specifications
3. Install hardware and software	3.1 Install required level of Redundant Array of Independent Disks (RAID) hardware and software 3.2 Install hard disks according to manufacturer specifications 3.3 Install operating system software according to manufacturer specifications 3.4 Connect required network media according to manufacturer specifications 3.5 Test functionality of hardware and software according to technical specifications
4. Configure NAS	4.1 Configure required network address and hostname 4.2 Establish and test required network connection with other LAN devices 4.3 Configure hard disks according to RAID requirements and format with required file system 4.4 Configure access and security according to application and organisational requirements
5. Test and troubleshoot NAS	5.1 Test NAS according to manufacturer and organisational requirements 5.2 Test access and response times aligned to required applications, users and organisational requirements 5.3 Make required adjustments to configuration according to organisational requirements 5.4 Document finalised process and outcomes and submit to required personnel

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Learning	• Monitors outcomes of decisions, considering results and identifying key concepts and principles that may be adaptable in the future
Numeracy	• Uses mathematical formulae to calculate required equipment, undertake measurements and determine response times
Reading	• Recognises and interprets technical, manufacturer and organisational documentation to determine and confirm job requirements

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SKILL	DESCRIPTION
Writing	• Develops a range of workplace documentation for a specific audience, using clear and detailed language to convey explicit information, requirements and recommendations
Planning and organising	• Operates from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation and identifying and addressing issues
Problem solving	• Uses nuanced knowledge of context to recognise anomalies and subtle deviations to normal expectations, focussing attention and remedying problems as they arise
Self-management	• Takes full responsibility for identifying and considering required organisational protocols and requirements
Technology	• Identifies and applies complex concepts, language and practices associated with the digital world

Unit Mapping Information

Supersedes and is equivalent to ICTNWK524 Install and configure network access storage devices.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK552 Install and configure network access storage devices

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- determine specifications, install, configure and test at least three network access storage devices on at least one occasion.

In the course of the above, the candidate must:

- troubleshoot performance issues where required
- document finalised outcomes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- advantages and disadvantages of NAS versus direct attached storage (DAS) devices
- legislative, regulatory, standards and codes of practice related to NAS
- industry standard hard drive types and connectors
- industry standard network cable types and connectors
- common network topologies
- process for implementation and configuration of networks
- redundant array of independent disks (RAID) configurations and their application in data storage.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

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- a NAS device and basic components to build a NAS including:
  - industry standard personal computer
  - industry standard operating system
  - hard disk and network connection
- network devices
- workstations and servers
- cabling access points and a wireless access point.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK553 Configure enterprise virtual computing environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to develop and implement virtualisation technologies, with the goal of providing a more sustainable Information and Communications Technology (ICT) environment.

It applies to individuals working in senior networking roles and are responsible for increasing the sustainability of an organisation through the use of virtualisation technologies.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to configure virtual environment	1.1 Analyse organisational environment and determine virtual environment requirements 1.2 Determine virtualisation software requirements 1.3 Determine environmental requirements for installing virtualisation software 1.4 Plan and document installation process according to organisational requirements and manufacturing specifications 1.5 Submit plan to required personnel and seek and respond to feedback
2. Install and configure	2.1 Install and configure services and ports according to

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ELEMENT	PERFORMANCE CRITERIA
support services	organisational requirements and manufacturing specifications 2.2 Install and configure virtualisation client and server management software according to organisational requirements and manufacturing specifications 2.3 Install and configure environmental requirements and virtual machines according to organisational requirements and manufacturing specifications 2.4 Test functionality of virtual machines and align with organisational and manufacturing requirements
3. Design and configure virtual network	3.1 Plan and document virtual network according to organisational requirements 3.2 Submit plan to required personnel, seek and respond to feedback 3.3 Install and configure required virtual networks according to organisational requirements and manufacturing specifications 3.4 Verify functionality of virtualisation network, according to organisational requirements and manufacturing specifications

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Learning	• Actively identifies systems, devices and applications with the potential to meet current and future needs
Oral communication	• Articulates requirements and responsibilities clearly and distinctively, using industry standard technical language intended for audience and environment
Reading	• Interprets technical, manufacturer and organisational documentation, to determine and confirm job requirements
Writing	• Prepares documentation expressing ideas, explores complex issues and constructed logically and succinctly • Writes and edits computer code and technical data, with correct syntax
Teamwork	• Collaborates with others, sharing information to build strong work groups • Elicits feedback and provides feedback to others
Planning and organising	• Operates from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation, identifying and addressing any issues

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SKILL	DESCRIPTION
Problem solving	• Responds intuitively to problems requiring immediate resolution, recognises anomalies and deviations from normal expectations, in a virtualised machine environment
Self-management	• Takes full responsibility for identifying and considering the required organisational protocols and policies for designing, configuring and managing virtual networks in a virtual environment
Technology	• Identifies and applies complex principles, concepts, language and practices associated with the digital world

Unit Mapping Information

Supersedes and is equivalent to ICTNWK525 Configure an enterprise virtual computing environment.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK553 Configure enterprise virtual computing environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- install, configure and test virtual machines on at least 2 occasions.

In the course of the above, the candidate must:

- manage environmental requirements
- document finalised outcomes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- government and industry policies and guidelines related to development of sustainable Information and Communication Technology (ICT) environments
- industry standard technologies and processes designed to produce required ICT environment
- tools and software applications required to manage virtual machines
- configuration of software applications required to manage virtual machines
- configuration required to integrate virtual machines into the existing network design
- outline structure, function and business organisation of the client.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a site or prototype where virtual machine environments may be implemented

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- the network's technical requirements
- industry required virtualisation software.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK554 Manage enterprise virtual computing environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to manage virtualisation technologies, with the goal of enhancing sustainable Information and Communications Technology (ICT) environments.

It applies to individuals who work in ICT roles where they are responsible for managing virtualisation technologies.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to manage resources	1.1 Analyse environment and determine organisational virtual computing environment outcome requirements 1.2 Test, verify and document required functionality of virtual environment 1.3 Determine virtual environment maintenance and upgrades according to organisational requirements and technical specifications 1.4 Implement required upgrades and maintenance and restore to organisational requirements
2. Manage virtual machines	2.1 Convert physical machine to a virtual machine 2.2 Select virtual machine deployment methods according to

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ELEMENT	PERFORMANCE CRITERIA
	organisational requirements 2.3 Create and deploy virtual machine and use installation media and automated templates 2.4 Deploy virtual machine snapshots and reverse and implement virtual machine changes according to organisational requirements
3. Confirm high availability	3.1 Plan and design high availability strategy according to organisational requirements 3.2 Identify required high availability implementation resources according to organisational and technical requirements 3.3 Implement and configure virtual machine environment and confirm high availability and live migration
4. Backup virtual environment	4.1 Plan and document backup strategy according to organisational and technical requirements 4.2 Backup and recover virtual machine and use required integrating third-party tools 4.3 Document backup and recovery outcomes and submit to required personnel 4.4 Seek and respond to feedback from required personnel

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Learning	• Monitors the outcomes of decisions, considering the results from a range of perspectives and identifying key concepts and principles that may be adaptable in the future
Oral communication	• Uses listening and questioning techniques to confirm knowledge of requirements to articulate and present complex concepts to the client
Reading	• Gathers, interprets and analyses technical and organisational data to determine requirements, according to client needs
Writing	• Prepares documentation that expresses ideas and explores complex issues and is constructed logically, succinctly and accurately • Writes and edits computer code and technical data, ensuring the correct syntax and accuracy
Planning and organising	• Operates from a broad conceptual plan, developing operational detail in stages and regularly reviewing priorities and performance, during

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SKILL	DESCRIPTION
	implementation and identifying and addressing any issues
Problem solving	• Recognises anomalies and subtle deviations to normal expectations, focusing attention and quickly remedying any problems as they arise
Self-management	• Takes full responsibility for identifying and considering, the required policies and legislative requirements in the management of an enterprise's virtual computing environment
Technology	• Identifies and applies complex principles, concepts, language and practices associated with the digital world and understands the uses and potential, of new technology

Unit Mapping Information

Supersedes and is equivalent to ICTNWK527 Manage an enterprise virtual computing environment.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK554 Manage enterprise virtual computing environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- create, deploy, back up and recover virtual machines on at least one occasion.

In the course of the above, the candidate must:

- document plans and outcomes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- government and industry policies and guidelines, in relation to development of sustainable Information and Communications Technology (ICT) environments
- industry standard and current technologies and processes designed to produce a sustainable ICT environment
- structure, functions and business organisation of organisation
- application and deployment of virtual machine management tools
- virtual machine configuration and integration options.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a site or prototype, where virtual machine environments may be implemented
- industry standard technical specifications
- required hardware and software.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK556 Identify and resolve network problems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to troubleshoot local area network (LAN), wide area network (WAN) and wireless network problems.

It applies to individuals working as network managers, network engineers and technical specialists or similar, and who generally work independently with limited supervision. Individuals at this level perform a broad range of problem-solving activities including troubleshooting, evaluating and analysing networks and planning and developing new systems and procedures.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Implement network monitoring	1.1 Set up required network monitoring logs and produce a management information base (MIB) according to organisational requirements 1.2 Benchmark network performance and establish network performance reference point 1.3 Identify critical activity levels and network capacity 1.4 Plan and document network performance review schedule according to organisational requirements and technical specifications

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ELEMENT	PERFORMANCE CRITERIA
	1.5 Determine additional network enhancing resource requirements according to organisational requirements and technical specifications
2. Prepare to troubleshoot network problems	2.1 Determine major network problems according to organisational reporting requirements 2.2 Identify organisational and vendor support services and network resolution plan 2.3 Plan and document network problem reporting and resolution plan 2.4 Lodge plan according to organisational requirements
3. Diagnose network faults	3.1 Establish fault hierarchy using data from previous resolution attempts 3.2 Progressively isolate and resolve fault according to technical specifications 3.3 Document fault resolution steps according to organisational requirements
4. Rectify faults	4.1 Isolate repair requirements according to technical specifications 4.2 Replace and reconfigure equipment and software 4.3 Test network and confirm fault rectification against technical requirements 4.4 Document outcomes according to organisational policies and procedures 4.5 Document user downtimes and submit report to required personnel
5. Finalise fault rectification process	5.1 Review fault resolution and determine likelihood for reoccurrence 5.2 Determine and document planned maintenance and upgrade requirements 5.3 Submit maintenance plan to required personnel 5.4 Seek and respond to feedback from required personnel

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Learning	• Demonstrates consideration of strategic and operational potential of digital trends to achieve work goals, enhance work processes, create

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SKILL	DESCRIPTION
	opportunities and enhance or reduce risks
Numeracy	• Performs mathematical calculations to analyse costs and values to accurately determine performance
Oral communication	• Uses highly developed listening and questioning techniques to understand others' perspectives and articulates complex information to required personnel
Reading	• Draws knowledge from written technical material, equipment manuals and other specifications to determine and confirm job requirements
Writing	• Develops a broad range of material such as reports and test documentation for a specific audience, using clear and detailed language to convey explicit information
Teamwork	• Identifies the requirements of important communication exchanges, selecting required channels, format, tone and content to suit purpose and audience
Planning and organising	• Operates from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation and identifying and addressing issues
Problem solving	• Uses nuanced knowledge of context to recognise anomalies in a network environment and subtle deviations to normal expectations, focussing attention and solving problems as they arise
Self-management	• Demonstrates the importance of knowledge, monitoring and controlling access to digitally stored and transmitted information • Identifies a need for further information or seek advice from required experts
Technology	• Demonstrates a sophisticated knowledge of principles, concepts, language and practices associated with the digital world

Unit Mapping Information

Supersedes and is equivalent to ICTNWK532 Identify and resolve network problems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK556 Identify and resolve network problems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- monitor a medium-sized network, determine and rectify network fault.

In the course of the above, the candidate must:

- provide constant monitoring and tuning of network
- document finalised processes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard hardware, cabling and software products, including general features and capabilities
- organisational maintenance response-level escalation procedures
- organisational business domain, including organisational structure and business functionality
- network management tools including general features and capabilities with substantial depth in troubleshooting areas
- outline industry standard network topologies
- networking technologies, features and capabilities including those relating to:
  - protocol stacks of transmission control protocol or internet protocol (TCP/IP)
  - open system interconnection (OSI)
- major organisations that oversee internet protocols
- industry standard network protocols.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a live system and sites with a representative range of network environments and operating systems
- technical records and documentation
- management information base of accumulated fault resolution information
- network support tools.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK557 Configure and manage advanced virtual computing environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to configure and manage advanced virtual computing environments and to provide a more efficient and reliable Information and Communications Technology (ICT) environment.

It applies to senior networking staff who are responsible for increasing the sustainability of an organisation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Configure and manage core virtual networks	1.1 Plan and design a virtual network according to organisational requirements 1.2 Configure virtual local area networks (VLANs) and required security and virtual switch (vSwitch) ports 1.3 Implement required security policies, traffic-shaping and network interface controller (NIC) teaming 1.4 Manage required distributed vSwitch connections, vSwitch physical and vSwitch storage adapter connections 1.5 Configure and manage required multiple networks

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ELEMENT	PERFORMANCE CRITERIA
	according to organisational requirements
2. Configure and manage core infrastructure storage and services	2.1 Obtain vendor provided virtualisation software technical storage specifications and system requirements 2.2 Plan, design and document core infrastructure storage environment according to organisational requirements 2.3 Create, configure, manage and secure virtual storage connection according to technical specifications 2.4 Install and test local and shared data store, data store clusters and resource pools according to technical specifications 2.5 Configure required provisioning services and templates according to organisational requirements and technical specifications
3. Secure virtual environment	3.1 Plan and document administrative strategies according to organisational requirements 3.2 Configure required user roles and administer virtual environment according to organisational requirements and technical specifications 3.3 Set up and secure required user privileges and permissions 3.4 Submit documents to required personnel, seek and respond to feedback

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Learning	• Monitors the progress of plans and schedules and reviews and changes them, to meet new demands and priorities • Investigates new and innovative ideas as a means by which to continuously improve work practices and processes through consultation, formal and analytical thinking
Oral communication	• Articulates requirements and responsibilities clearly and distinctively, using industry standard technical language intended for audience and environment
Reading	• Draws on strategies, in order to build and maintain knowledge throughout complex texts
Writing	• Prepares documentation that expresses ideas, explores complex

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SKILL	DESCRIPTION
	issues and is constructed logically, succinctly and accurately
Planning and organising	• Operates from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation and identifying and addressing issues
Problem solving	• Makes critical decisions quickly and intuitively in complex situations, taking into consideration a range of variables and previous decisions • Applies systematic and analytical decision-making processes for complex and non-routine situations
Self-management	• Modifies or develops organisational policies and procedures, to comply with legislative requirements and the organisation's goals
Technology	• Uses and investigates, new digital technologies and applications to manage and manipulate data and to communicate effectively with others, in a secure and stable digital environment

Unit Mapping Information

Supersedes and is equivalent to ICTNWK533 Configure and manage advanced virtual computing environments.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK557 Configure and manage advanced virtual computing environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- plan, design and configure a medium-size virtual network.

In the course of the above, the candidate must:

- document finalised plans and processes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- government and industry policies and guidelines, relating to the development of efficient and reliable, Information and Communications Technology (ICT) environments
- industry standards technologies and processes, designed to produce an efficient and reliable ICT environment
- structure, functions and business organisation of the client
- benefits and costs of virtualisation
- procedures and processes for planning, designing and securing virtual environments
- design and configuration of industry standard tools and software applications required to manage virtual machines
- configuration required to integrate virtual machines into the existing network design
- configuration and management of industry standard storage infrastructure.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

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- a site or prototype, where virtual machine environments may be implemented
- network technical requirements
- a range of suitable software.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK558 Monitor and troubleshoot virtual computing environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to monitor and troubleshoot virtualisation technologies to provide a more efficient and reliable Information and Communications Technology (ICT) environment.

It applies to those who work as senior networkers and administrators, and responsible for increasing the sustainability of an enterprise or similar environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to monitor and troubleshoot virtual computing environment	1.1 Determine environment optimal performance requirements 1.2 Determine, list and categorise required resources according to organisational requirements 1.3 Identify virtual environment's critical activity level and assign resources 1.4 Review system's logs and alerts and facilitate virtual environment tuning 1.5 Develop and document virtual environment performance monitoring plan according to

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ELEMENT	PERFORMANCE CRITERIA
	organisational requirements
2. Manage virtual environment performance	2.1 Monitor and diagnose memory central processing unit (CPU) and distributed power management performance 2.2 Review storage and cluster performance and maximise operational efficiency 2.3 Monitor tasks, events, alarms and network activity and make optimal operation adjustments
3. Analyse and troubleshoot virtual environments	3.1 Review and identify performance issues in virtual machine capacity, application, storage, input and output (I/O) performance 3.2 Resolve identified performance issues according to organisational requirements and technical specifications 3.3 Test, analyse and troubleshoot identified virtual network performance issues 3.4 Analyse high availability and troubleshoot identified performance 3.5 Consult with the virtualisation software vendors to provide solutions, where required
4. Diagnose virtual environment faults and provide solutions	4.1 Use virtualisation client and server management software tools and diagnose virtual environment problems 4.2 Install and configure external virtualisation management tools and diagnose virtual environment problems 4.3 Identify and resolve alerts and system logged errors 4.4 Document solution outcomes and submit to required personnel 4.5 Seek and respond to feedback from required personnel

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Learning	• Investigates new and innovative ideas, as a means to continuously improve work practices and processes, through consultation, formal and analytical thinking

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SKILL	DESCRIPTION
Oral communication	• Use listening and questioning techniques for seeking and responding to feedback
Reading	• Critically analyses documentation from a variety of sources and records and consolidates information, to determine requirements
Writing	• Writes, edits and proofreads documents to confirm clarity of meaning and accuracy and the consistency of information
Planning and organising	• Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others, taking into account capabilities, efficiencies and effectiveness • Monitors the progress of plans and schedules and reviews and changes them, to meet new demands and priorities
Problem solving	• Applies systematic and analytical decision- making processes for complex and non-routine situations

Unit Mapping Information

Supersedes and is equivalent to ICTNWK534 Monitor and troubleshoot virtual computing environments.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK558 Monitor and troubleshoot virtual computing environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- monitor, manage, analyse and troubleshoot a medium-sized virtual computing environment.

In the course of the above, the candidate must:

- document finalised process and solutions.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- government and industry policies and guidelines relating to the development of efficient and reliable Information and Communications Technology (ICT) environments
- industry standard technologies and processes designed to produce an efficient and reliable ICT environment
- client organisational structure and functions applicable to ICT environments
- industry standard tools and software applications used to manage virtual machines
- configuration of software applications used to manage virtual machines
- configuration required to integrate virtual machines into an existing network design.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a site or prototype, where virtual machine environments may be implemented

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- network technical requirements
- industry standard software and hardware.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK559 Install an enterprise virtual computing environment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to develop and implement virtualisation technologies to implement and enhance the efficiency and reliability of the Information and Communications Technology (ICT) environment.

It applies to individuals working in senior networking roles, and responsible for increasing the sustainability of an organisation or similar environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine enterprise virtual computing requirements	1.1 Analyse organisational virtual computing environment and determine organisational needs 1.2 Assess existing organisational systems and determine suitability for virtualisation 1.3 Determine and document required installation process and resources according to organisational requirements
2. Analyse the virtualisation host software	2.1 Determine virtualisation host software requirements 2.2 Identify and compare industry standard virtualisation host software 2.3 Determine and document recommended virtualisation host software and submit to required personnel

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ELEMENT	PERFORMANCE CRITERIA
3. Evaluate system requirements	3.1 Obtain technical specifications, licensing and system requirements from virtualisation software vendors 3.2 Evaluate and compare system requirements needed to implement virtualisation 3.3 Determine and document recommendations and submit to required personnel
4. Plan and install the virtualisation host software	4.1 Prepare environment and initiate host software installation according to technical specifications 4.2 Obtain and install virtualisation host platform according to technical specifications 4.3 Test and validate functionality of virtualisation host platform against specifications 4.4 Finalise reports and documentation and submit to required personnel

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Learning	• Investigates new and innovative ideas, as a means by which to continuously improve, work practices and processes through consultation, formal and analytical thinking
Oral communication	• Uses collaborative and inclusive techniques, including active listening and questioning and the reading of verbal and non-verbal signals to convey and clarify information and to confirm knowledge
Reading	• Demonstrates critical analysis of documentation from a variety of sources and records and consolidates information, in order to determine requirements
Writing	• Prepares and produces dynamic material for a specific audience, using clear and detailed language in order to convey explicit information, requirements and recommendations
Teamwork	• Requests feedback and provides feedback to others, in order to improve self or workgroup behaviours • Recognises the diversity in people and manages this diversity to improve workplace relations and practices
Planning and organising	• Monitors the progress of plans and schedules and reviews and changes them, to meet new demands and priorities

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SKILL	DESCRIPTION
Problem solving	• Identifies and resolves key business issues, processes and practices that may have legal implications • Makes critical decisions quickly and intuitively in complex situations, taking into consideration a range of variables, including the outcomes of previous decisions • Applies systematic and analytical decision- making processes for complex and non-routine situations
Self-management	• Takes full responsibility for following policies, procedures and legislative requirements and identifies the organisational implications of new legislation or regulation

Unit Mapping Information

Supersedes and is equivalent to ICTNWK535 Install an enterprise virtual computing environment.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK559 Install an enterprise virtual computing environment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- plan and install a medium enterprise virtual computing environment.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- government and industry policies and guidelines relating to the development of efficient and reliable, information and communications technology (ICT) environments
- recommendations on sustainability options in ICT design
- benefits of virtualisation
- processes and procedures for installing and configuring virtualisation software and virtual machines
- processes and procedures for configuring virtual machines into network design
- industry standard tools and software applications required to manage virtual machines
- configuration of software applications required to manage virtual machines
- configuration required to integrate virtual machines into existing network design.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- site or prototype, where virtual machine environments may be implemented
- the network's technical requirements
- industry standard virtualisation software.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTNWK617 Configure and manage a storage area network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit addresses the knowledge, processes and techniques necessary to configure and manage a Storage Area Network (SAN) which are widely used in the enterprise datacenter space and when coupled with server virtualisation technology, form the basis for highly available datacentres.

It applies to specialist technicians and storage engineers who manage and maintain highly available data storage in a networked environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine specifications for a Storage Area Network	1.1 Analyse and document client requirements. 1.2 Analyse and document the required topology to support a storage area network. 1.3 Analyse and determine the required storage capacity according to current and future business requirements. 1.4 Determine the storage protocols to be used to meet

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ELEMENT	PERFORMANCE CRITERIA
	organisational requirements. 1.5 Determine the requirements for network management, backup, security and redundancy, according to organisational policy. 1.6 Analyse and recommend a SAN model based on client design requirements.
2. Configure network settings on a Storage Area Network filer/node.	2.1 Configure the initial SAN Network settings to facilitate network communication using the recommended process. 2.2 Configure Management Interface address to allow configuration of remaining network interfaces. 2.3 Create logical interfaces to support network-attached storage (NAS) protocols 2.4 Create logical interfaces to support SAN protocols 2.5 Configure virtual local area networks (VLAN) to segment the network according to the design brief
3. Provision storage	3.1 Create aggregate/s using recommended redundant array of independent disks (RAID) levels in accordance with the documented design brief. 3.2 Create logical volume/s in accordance with the documented design brief. 3.3 Create logical unit number/s (LUN) in accordance with the documented design brief. 3.4 Provision a share using NAS protocols in accordance with the documented design brief. 3.5 Provision storage using SAN protocols in accordance with the documented design brief.
4. Connect client and/or server to provisioned storage.	4.1 Connect client and/or server to shared storage using NAS protocols and verify operations. 4.2 Connect client to shared storage using SAN protocols and verify operations.
5. Configure advanced Storage Area Network Features.	5.1 Provision and test SAN based volume snapshot operations. 5.2 Provision and test SAN based data deduplication operations.
6. Configure Backup and Disaster recovery features.	6.1 Provision and test SAN based data replication operations. 6.2 Provision and test SAN based backup and restore operations.

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 2.1, 3.1, 3.2, 3.3, 3.4, 3.5, 4.1, 4.2	• Recognises and interprets technical and organisational documentation to determine and confirm job requirements.
Writing	1.1, 2.2, 3.1, 3.3	• Develops a range of workplace documentation for a specific audience using clear and detailed language in order to convey explicit information, requirements and recommendations.
Oral Communication	1.1, 3.1	• Uses listening and questioning skills to confirm understanding for requirements • Establishes and maintains complex and effective spoken communication in a broad range of contexts
Navigate the world of work	1.4, 1.5	• Recognises and responds to both explicit and implicit protocols within familiar work contexts and appreciates the importance of identifying and responding to protocols in new situations
Get the work done	1.2, 2.1, 2.2, 2.4, 2.5, 3.1, 3.2, 3.3, 3.4, 3.5, 4.1, 4.2, 5.1,5.2, 6.1, 6.2	• Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world • May operate from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation, identifying and addressing issues • Actively identifies systems, devices and applications with potential to meet current and/or future needs • Uses nuanced understanding of context to recognise anomalies in a virtualised machine environment and subtle deviations to normal expectations, focussing attention and remedying problems promptly

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status

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Code and title current version	Code and title previous version	Comments	Equivalence status
ICTNWK617 Configure and manage a storage area network	Not applicable	New unit	No Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK617 Configure and manage a storage area network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- determine and document the specifications for a Storage Area network (SAN) solution
- select the appropriate SAN solution to meet the client requirements
- document and design a SAN solution that includes backup, security and redundancy
- install and configure a storage cluster, either physically or in a simulated/virtualised environment
- configure network settings to facilitate management of a SAN
- verify and troubleshoot network connectivity
- configure network protocols to facilitate storage access via a client/server environment
- provision shared storage using suitable protocols
- configure and use advanced SAN features if available
- monitor and report on capacity utilization
- resize existing storage to increase the size of existing datastores
- create new datastores utilising capacity on a storage system.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe the function and applications of the following network protocols:
  - common internet file system CIFS
  - sever message block (SMB)
  - network file system (NFS)
  - internet small computer system interface (iSCSI)
  - fibre channel (FC)

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  - fibre channel over Ethernet (FCOE)
- describe the advanced SAN features including:
  - snapshots
  - data deduplication
  - flexible volumes
  - replication
  - backup and restore
- describe the advantages and disadvantages of storage area networks (SAN) versus direct attached storage (DAS) devices
- identify and describe common hard drive types including:
  - serial attached SCSI (small computer system interface) -SAS
  - serial ATA (SATA)
  - solid state disk (SSD)
- identify and describe common network cable types and connectors
- outline the common network topologies
- describe the implementation and configuration of SANs
- recognise and describe redundant array of independent disks (RAID) configurations and state their application in data storage
- describe which features of advanced storage systems can be applied in server and/or virtualized environments
- describe the functional and interconnection relationship between storage systems and servers in server and/or virtualized environments
- describe how storage systems can protect against data storage failures and the functional process for recovering data.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the networking field of work and include access to:

- site or prototype where a storage area network may be implemented
- storage area network appliance or simulated appliance
- network technical requirements
- appropriate software.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK618 Design and implement a security system

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to use software tools, equipment and protocols to implement a security system.

It applies to individuals who work in ICT roles that involve the planning and implementing of networks, including budgeting, and determining and resolving network security threats.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Assess network infrastructure threats	1.1 Identify major industry standard network attacks and malware 1.2 Evaluate mitigation methods for required network attacks and malware according to organisational network architecture 1.3 Determine and document options for defending network architecture
2. Secure edge devices (routers)	2.1 Secure required network routers according to technical requirements 2.2 Secure required administration access to routers using the router operating system (OS) 2.3 Secure required router OS and its configuration

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ELEMENT	PERFORMANCE CRITERIA
	file(s)
3. Implement authentication, authorisation and accounting (AAA) and secure access control system (ACS)	3.1 Determine and implement required authentication and authorisation 3.2 Configure router and use AAA according to technical requirements 3.3 Analyse and compare Terminal Access Controller Access-Control System Plus (TACACS+) and Remote Authentication Dial In User Service (RADIUS) AAA protocols for securing the network
4. Mitigate threats to routers and networks using access control lists (ACLs)	4.1 Assess and document access control list functionality and requirements 4.2 Configure and verify IP ACLs to mitigate threats and prevent internet protocol (IP) address spoofing 4.3 Test IP ACLs functionality against organisational and technical requirements
5. Implement secure network management and reporting	5.1 Configure secure shell (SSH) on routers and enable secure management 5.2 Configure routers to send log messages to a log server with tools 5.3 Document layer two attack prevention methods and confirm basic switch security features 5.4 Configure layer two attack prevention switch
6. Implement intrusion detection and prevention system (IDPS) feature set in the router OS using secure device manager (SDM)	6.1 Evaluate and compare network based and host based IDPS and identify malicious activity, log information, attempt to stop activity and document reported activity 6.2 Determine IDPS technologies, attack responses and monitoring options 6.3 Configure router OS IDPS operations according to organisational and technical requirements 6.4 Finalise reports and documentation and submit to required personnel

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION

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SKILL	DESCRIPTION
Numeracy	• Interprets numerical data when taking test measurements, interpreting results and evaluating performance and interoperability of the network
Oral communication	• Establishes and maintains complex and effective spoken communication to convey and clarify a range of complex information
Reading	• Recognises and interprets technical documentation to determine and confirm job requirements
Writing	• Develops a broad range of materials, such as reports, for a specific audience using clear and detailed language to convey explicit information
Teamwork	• Actively identifies the requirements of important communication exchanges, selecting required channels, format, tone and content to suit purpose and audience and monitors impact • Actively identifies, creates and utilises linkages to enhance knowledge sharing, idea creation, individual and collective engagement and work outcomes
Planning and organising	• Operates from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation and identifying and addressing issues
Problem solving	• Responds intuitively to problems requiring immediate resolution, using knowledge of context to recognise anomalies and deviations from normal expectation in a network environment
Self-management	• Uses a broad range of strategies to store, access and organise virtual information, recognising that design choices will influence what information is retrieved and how it may be interpreted and used • Demonstrates an acute awareness of the importance of knowledge, monitoring and controlling access to digitally stored and transmitted information • Monitors outcomes of decisions, considering results from a range of perspectives and identifying key concepts and principles that may be adaptable to future situations
Technology	• Considers the strategic and operational potential of digital trends to achieve work goals, enhance work processes, create opportunities and enhance or reduce risks

Unit Mapping Information

Supersedes and is equivalent to ICTNWK601 Design and implement a security system.

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Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK618 Design and implement a security system

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design and implement a virtual private network (VPN) and mitigate attacks on at least two different occasions.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- authentication protocols and encryption methodologies
- intrusion detection system (IDS) and intrusion prevention system (IPS)
- internet protocol (IP) and networking models
- industry standard procedures, techniques and certifications for:
  - access control lists
  - wireless regulations
  - malicious attacks and prevention techniques
  - network management tools
- procedures and techniques to configure, verify and troubleshoot, including:
  - switch with virtual local area networks (VLANs) and inter-switching communications
  - router
  - access control lists
- command line interface to configure and test network elements
- common features of Terminal Access Controller Access-Control System Plus (TACACS+) and Remote Authentication Dial In User Service (RADIUS) authentication, authorisation and accounting (AAA) protocols.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a site where network security may be evaluated and tightened
- required hardware and software, including:
  - LAN or WLAN internet work technologies
  - network security technologies
- organisational guidelines, procedures and policies applicable to designing and implementing security systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK619 Plan, configure and test advanced server-based security

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to implement advanced server security using secure authentication and network services on a network server.

It applies to individuals working in network specialists roles, ICT network engineers, network security specialists, network security planners, network security designers.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan advanced network server security	1.1 Determine required advanced network server environment 1.2 Analyse and review existing security documentation and identify network service vulnerabilities 1.3 Research required network authentication and network service configuration options and implications 1.4 Determine and document server security design solution according to organisational requirements
2. Prepare for network server security implementation	2.1 Assess environment and determine risk and hazard potential

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Determine existing organisational risk and hazard control measures 2.3 Update existing risk control measures plan and align to installation requirements 2.4 Submit plan to required personnel, seek and respond to plan feedback 2.5 Implement risk and control preparation components according to technical and organisational requirements
3. Configure advanced network server security according to design	3.1 Configure required network authentication, authorisation, accounting services and automatic updates 3.2 Configure service security and access control lists according to technical design specifications 3.3 Configure required encryption and advanced network service security options 3.4 Configure operating system and third-party firewall and filter traffic in line with security requirements 3.5 Implement backup and recovery methods and enable restoration capability in the event of a disaster
4. Monitor and test network server security	4.1 Test and monitor server, server logs, network traffic and assess effectiveness of network service security 4.2 Monitor required files, detect unauthorised modifications, open ports and detect possible intrusions 4.3 Investigate, verify and document alleged violations of server and data security and privacy breaches 4.4 Implement required risk control measures plan recovery strategies and document outcomes 4.5 Finalise reports and documentation and submit to required personnel

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Learning	• Considers the strategic and operational potential of digital trends to achieve work goals, enhance work processes, create opportunities

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SKILL	DESCRIPTION
	and enhance or reduce risks
Oral communication	• Uses listening and questioning skills to confirm knowledge for requirements and when seeking and responding to feedback
Reading	• Interprets technical enterprise security procedures, policies, specifications and vendor notifications to determine and confirm job requirements
Writing	• Develops a broad range of material including security reports for a specific audience, using clear and detailed language to convey explicit information, requirements and recommendations
Teamwork	• Actively identifies the requirements of important communication exchanges, selecting required channels, format, tone and content to suit purpose and audience
Planning and organising	• Keeps up to date on changes to legislation or regulations required to own rights and responsibilities and considers implications of these when planning, negotiating and undertaking work
Problem solving	• Uses a broad range of strategies to store, access and organise virtual information, recognising that design choices will influence what information is retrieved and how it may be interpreted and used • Operates from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation and identifying and addressing issues
Self-management	• Uses nuanced knowledge of context to detect, investigate and recover from security breaches
Technology	• Demonstrates an acute awareness of the importance of knowledge, monitoring and controlling access to digitally stored and transmitted information

Unit Mapping Information

Supersedes and is equivalent to ICTNWK602 Plan, configure and test advanced server-based security.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK619 Plan, configure and test advanced server-based security

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- install, configure and test network security on a medium sized network on at least one occasion.

In the course of the above, the candidate must:

- monitor the server for security breaches
- document requirements, processes and outcomes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard auditing and penetration testing techniques
- best practice procedures for implementing backup and restore
- industry standard cryptographic techniques
- procedures for error and event logging and reporting
- intrusion detection and recovery procedures
- industry standard network service configuration, including:
  - DNS
  - dynamic host configuration protocol (DHCP)
  - web
  - mail
  - FTP
  - server messages block (SMB)
  - network time protocol (NTP)
  - proxy

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- network service security features, options, limitations and vulnerabilities
- planning, configuration, monitoring and troubleshooting techniques
- security protection mechanisms, security threats and risks
- server firewall configuration, monitoring and troubleshooting tools and techniques, including network monitoring and diagnostic utilities
- user authentication and directory services.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a site where server installation may be conducted
- server specifications
- cabling
- networked (LAN) computers
- server diagnostic software
- switch
- WAN service point of presence
- regulatory documentation that impacts on installation activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK620 Design and implement wireless network security

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to mitigate security threats to a wireless local area network (WLAN) by implementing security standards and policies.

It applies to individuals working in specialised Information and Communications Technology (ICT) roles including wireless help desk support technicians, wireless network support specialists and wireless network engineers.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to implement wireless network security	1.1 Evaluate benchmarked organisational and regulatory security policies and network security standards 1.2 Assess organisational requirements against regulatory security compliance 1.3 Develop and document security solution plan according to organisational requirements and future growth expectations
2. Design, implement and test guest access services	2.1 Analyse and select architecture for guest access services 2.2 Produce map and set up guest access accounts 2.3 Configure WLAN controller authorisation

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ELEMENT	PERFORMANCE CRITERIA
	2.4 Configure anchor and internal controllers 2.5 Troubleshoot guest access issues
3. Design, implement and test security of wireless client devices	3.1 Design and configure authentication of clients and management frame protection on clients and controllers 3.2 Configure access control servers and integrate with wireless network 3.3 Configure client-and server-side digital certificate services 3.4 Troubleshoot secure wireless connectivity services
4. Design, implement and test integration of wireless network	4.1 Analyse network admission control architectures and assess feasibility of network integration 4.2 Analyse high-level authentication process flow and confirm that integration is compatible 4.3 Configure and test admission control wireless controller 4.4 Troubleshoot network access integration issues of control
5. Evaluate and plan secure wireless connectivity services	5.1 Configure intrusion detection system (IDS) and monitor network activities for malicious activities and policy violations 5.2 Analyse IDS report and review threat-mitigation strategies 5.3 Update security solution plan, mitigate wireless vulnerabilities and check network integrity according to network security requirements
6. Manage WLAN integration requirements and advanced security platform requirements	6.1 Evaluate end-to-end security solutions and assess compatibility to integrate with required wireless solutions 6.2 Analyse WLAN firewall configuration requirements and confirm compliance with organisational and network security requirements 6.3 Configure and test WLAN controllers and detect wired and wireless intrusion prevention and detection system (IPDS) security protection 6.4 Finalise reports and documentation and submit to required personnel

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Learning	• Uses a mix of intuitive and formal processes to identify key information and issues, evaluate alternative strategies, anticipate consequences and consider implementation issues and contingencies • Monitors outcomes of decisions, considering results from a range of perspectives and identifying key concepts and principles that may be adaptable to future situations
Numeracy	• Interprets numerical data and undertakes measurements to evaluate performance and interoperability of network
Reading	• Interprets complex technical information to determine hardware requirements
Writing	• Develops a broad range of material including plans, maps and other documentation for a specific audience, using clear and detailed language to convey explicit information, requirements and recommendations
Planning and organising	• Demonstrates knowledge of own legal rights and responsibilities and considers implications of these when planning and undertaking work
Problem solving	• Demonstrates a sophisticated knowledge of principles, concepts, language and practices associated with the digital world and uses these to troubleshoot and understand the uses and potential of new technology
Self-management	• Demonstrates an acute awareness of the importance of knowledge, monitoring and controlling access to digitally stored and transmitted information
Technology	• Uses a broad range of strategies to store, access and organise virtual information, recognising that design choices will influence what information is retrieved and how it may be interpreted and used • Uses nuanced knowledge of context to adapt configuration procedures to requirements of network, troubleshoot and debug WLAN issues and modify work depending on operational contingencies, risk situations and environments

Unit Mapping Information

Supersedes and is equivalent to ICTNWK607 Design and implement wireless network security.

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Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK620 Design and implement wireless network security

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- plan, implement and manage wireless network security on a medium size network on at least one occasion.

In the course of the above, the candidate must:

- document requirements, processes and outcomes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- configuration, verification and troubleshooting procedures for:
  - router operation and routing
  - virtual local area network (VLAN) switching and inter-switching communications
- iDevice Operating System (iOS) and internet protocol (IP) networking models
- intrusion prevention system (IPS) and intrusion detection system (IDS) security protection
- network security threat mitigation strategies
- aspects of wireless, including:
  - industry standard regulations, standards and certifications
  - deployment schemes
  - network security technology
  - network topologies, architectures and elements
  - networking protocols
- WLAN with reference to:
  - advanced security platforms
  - devices, their specification and use

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- radio frequency characteristics and their measuring techniques.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a site or prototype where network installation may be conducted
- industry standard hardware and software, including:
  - live network
  - stand-alone and lightweight WLAN controllers and access points (AP)
  - WLAN site survey tools
  - IDS and IPS
- organisational guidelines.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK621 Configure network devices for a secure network infrastructure

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to use software tools, equipment and protocols to configure network devices in the design of the infrastructure of a secure network.

It applies to individuals with advanced Information and Communications Technology (ICT) expertise, who adapt router and switch operating system capabilities to mitigate attacks.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Implement layer two security	1.1 Configure router operating system (OS) commands and mitigate layer two attacks 1.2 Implement identity-based networking services (IBNS) and provide layer two security 1.3 Implement required identity management and use access control system (ACS)
2. Configure router OS intrusion prevention system (OS-IPS)	2.1 Evaluate advanced capabilities of router OS-IPS firewall feature set and include event action processing (EAP) 2.2 Configure and verify IPS features, identify threats and dynamically block from network

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ELEMENT	PERFORMANCE CRITERIA
	2.3 Maintain, update and tune required IPS signatures 2.4 Configure and verify context-based access control (CBAC) and network address translation (NAT) and dynamically mitigate identified network threats 2.5 Configure and verify zone-based firewall (ZFW), advanced application inspections and uniform resource locator (URL) filtering
3. Configure virtual private networks (VPNs)	3.1 Analyse and evaluate internet protocol security (IPSec) and generic routing encapsulation (IPSec/GRE) features and functionality 3.2 Configure secure connectivity for site-to-site VPN using certificate authorities 3.3 Analyse required dynamic multipoint VPN (DMVPN) features and capabilities 3.4 Configure and verify secure connectivity for site-to-site VPN operations
4. Provide secure connectivity for site-to-site and remote access communications	4.1 Provide highly secure network access with secure socket layer (SSL) VPN to deliver remote access connectivity features and benefits 4.2 Evaluate EasyVPN benefits and configure EasyVPN server with dynamic virtual tunnel interface (DVTI) to create a virtual access interface on the virtual tunnel interface 4.3 Configure and verify EasyVPN remote to establish a site-to-site connection using both router and VPN software clients 4.4 Implement group-encrypted transport (GET) VPN features to simplify the provisioning and management of VPN
5. Implement network foundation protection (NFP)	5.1 Evaluate NFP infrastructure protection features and document outcomes 5.2 Secure management plane, data plane and control plane and use OS features of the router 5.3 Determine functionality against technical specifications 5.4 Report on evaluation outcomes and obtain sign off from required personnel

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Learning	• Demonstrates a sophisticated knowledge of principles, concepts, language and practices associated with the digital world and uses these to troubleshoot and understand the uses and potential of new technology • Explores and incubates new and innovative ideas through unconstrained analysis and critical thinking
Numeracy	• Selects from and flexibly applies, a wide range of highly developed mathematical and problem-solving strategies and techniques in a broad range of contexts
Oral communication	• Articulates requirements and responsibilities clearly and distinctively, using industry standard technical language intended for audience and environment
Reading	• Organises, evaluates and critiques ideas and information from a range of complex texts • Draws on a broad range of strategies to build and maintain knowledge throughout complex texts
Writing	• Generates complex written texts, demonstrating control over a broad range of writing styles and purposes • Writes and edits computer code and technical data ensuring correct syntax and accuracy
Planning and organising	• Plans strategic priorities and outcomes within a flexible, efficient and effective context in a diverse environment exposed to competing demands
Problem solving	• Uses a broad range of strategies to store, access and organise virtual information recognising that design choices will influence what information is retrieved and how it may be interpreted and used
Self-management	• Takes full responsibility for identifying and considering required organisational protocols and requirements

Unit Mapping Information

Supersedes and is equivalent to ICTNWK608 Configure network devices for a secure network infrastructure.

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Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK621 Configure network devices for a secure network infrastructure

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design, implement and verify network security systems using layer two and layer three devices.

In the course of the above, the candidate must:

- document evaluation outcomes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- configuration, verification and troubleshooting procedures to undertake:
  - virtual local area network (VLAN) switching
  - inter-switching communications
  - setting up and securing firewalls
  - tunnelling protocols
- key features of deployment schemes
- iDevice operating system (iOS) and internet protocol (IP) networking models
- local area network (LAN) and wide area network (WAN) implementations
- network address translation (NAT) concepts and configuration, topologies, architectures and elements, networking standards and protocols
- procedures for configuring, verifying and troubleshooting router operations and routing
- secure connectivity and remote access communications, security protocols, such as secure socket layer (SSL)
- key features of VPN technologies.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a site or prototype where network security may be evaluated and tightened
- organisational guidelines, procedures and policies applicable to configuring network devices securely
- required hardware and software LAN and WLAN internetwork technologies and security technologies.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK622 Configure and manage intrusion prevention system on network sensors

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to use required tools, equipment and software to implement an intrusion prevention system (IPS) on IPS sensors to mitigate network attacks.

It applies to individuals with advanced Information and Communications Technology (ICT) skills who are working as certified IPS specialists, network security specialists and network security managers.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Evaluate ways IPS sensors are used to mitigate network attacks	1.1 Evaluate inline operations network system requirements according to industry standards and organisational requirements 1.2 Evaluate inline to promiscuous mode sensor operations and IPS devices network protection capability 1.3 Evaluate and determine ways IPS can defeat evasive network hacking methods 1.4 Evaluate selection considerations, placement and deployment of network IPS and IPS signature

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ELEMENT	PERFORMANCE CRITERIA
2. Select, install and configure IPS sensors	2.1 Install, initialise and configure sensor interfaces, interface pairs, virtual local area network (VLAN) pairs and VLAN groups 2.2 Configure management access to sensor appliance and create required user accounts 2.3 Set up, manage and monitor sensor communications with external management and monitoring systems and use built-in tools 2.4 Upgrade IPS sensor parameters and licensing requirements and maintain network integrity 2.5 Plan mitigation of specific network vulnerabilities and exploits according to organisational requirements
3. Tune IPS sensor advanced system parameters	3.1 Tune sensor signatures and provide optimal protection of network 3.2 Create custom and meta signatures and align to mitigation performance requirements 3.3 Configure passive operating system (OS) fingerprinting gateway 3.4 Configure external product interface to receive and process information from external security and management products 3.5 Configure a virtual sensor and anomaly detection
4. Manage IPS security and network response attacks	4.1 Monitor IPS events and determine network attack response 4.2 Assess IPS effectiveness against security intrusion 4.2 Report on security and response attacks according to organisational requirements

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Learning	• Demonstrates a sophisticated knowledge of principles, concepts, language and practices associated with the digital world and uses these to troubleshoot and understand the uses and potential of new technology • Demonstrates knowledge that identified ‘problems’ can be surface indicators of deeper issues and routinely reframes problem

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SKILL	DESCRIPTION
	definitions as part of the process of identifying a root cause
Numeracy	• Selects from and flexibly applies, a wide range of highly developed mathematical and problem-solving strategies and techniques in a broad range of contexts
Reading	• Recognises and interprets complex technical and regulatory information to determine and confirm job requirements
Writing	• Demonstrates sophisticated writing skills by selecting required conventions and stylistic devices to express precise meaning • Writes and edits complex computer code and technical data, ensuring correct syntax and accuracy
Teamwork	• Develops and implements communications strategies with internal and external persons • Shares knowledge, information and experience openly as an integral part of the working relationship
Planning and organising	• Operates from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation and identifying and addressing issues
Problem solving	• Uses a broad range of strategies to store, access and organise virtual information, recognising that design choices will influence what information is retrieved and how it may be interpreted and used • Uses a mix of intuitive and formal processes to identify key information and issues, evaluate alternative strategies, anticipate consequences and consider implementation issues and contingencies
Self-management	• Understands own legal rights and responsibilities and considers implications of these when planning and undertaking work • Demonstrates an acute awareness of the importance of knowledge, monitoring and controlling access to digitally stored and transmitted information

Unit Mapping Information

Supersedes and is equivalent to ICTNWK609 Configure and manage intrusion prevention system on network sensors.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK622 Configure and manage intrusion prevention system on network sensors

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify and evaluate requirements for a medium size digital environment on at least one occasion
- configure, tune and manage intrusion prevention system on at least one occasion.

In the course of the above, the candidate must:

- upgrade and maintain IPS sensors
- document finalised processes and outcomes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- configuration, verification and troubleshooting procedures to undertake switch and router operation and routing protocol
- internetwork operating system (IOS), internet protocol (IP) networking models and deployment schemes
- IP addressing and transmission control protocol (TCP) and IP stack
- IPS and intrusion detection system (IDS) strategies, sensor technologies and licensing requirements
- local area network and wide area network (LAN/WAN) implementations and design
- network topologies, architectures, elements, standards and protocols
- virtual local area network (VLAN) concepts and functionality and virtual private network (VPN) technologies
- legislation, regulations, standards and codes of practice required to network security.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a site or prototype where network installation may be conducted
- industry standard hardware and software
- organisational guidelines, policies and procedures
- live network
- an IPS system and its sensors.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK623 Manage ICT security

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to manage Information and Communications Technology (ICT) security including data security, enterprise continuity, incidents, networks and telecommunications security and system and application security.

It applies to individuals with managerial responsibility and advanced ICT expertise, working as security technical specialists, security analysts or security consultants.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Manage enterprise security parameters	1.1 Determine organisational security benchmarking requirements 1.2 Review security classification and data management policies and procedures 1.3 Determine and document effective enterprise continuity of operations (COOP) program and critical business continuity structure 1.4 Integrate and evaluate required risk management concepts 1.5 Evaluate and document security incidents and establish effective incident management program according to

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ELEMENT	PERFORMANCE CRITERIA
	organisational requirements
2. Manage networks and telecommunications security	2.1 Develop and document network security and telecommunications program according to organisational requirements 2.2 Establish risk management communication protocols between network security, telecommunications team and required personnel 2.3 Determine and document integrated network security and telecommunications network performance
3. Implement and document enhancements	3.1 Implement required changes and improvement actions and evaluate effectiveness of enhancements 3.2 Produce and table documentation for audit tracking 3.3 Submit all documentation to required personnel and seek and respond to feedback 3.4 Obtain final task sign off from required personnel

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Learning	• Demonstrates a sophisticated knowledge of principles, concepts, language and practices associated with the digital world and uses these to troubleshoot and understand the uses and potential of new technology • Monitors outcomes of decisions, considering results from a range of perspectives and identifying key concepts and principles that may be adaptable to future situations
Numeracy	• Uses mathematical formulas and calculations to estimate and plan project costs
Oral communication	• Articulates requirements and responsibilities clearly and distinctively, using industry standard technical language intended for audience and environment
Reading	• Identifies, analyses and evaluates complex text to determine regulatory and business requirements
Writing	• Develops a broad range of operational material, including recommendations and reports for a specific audience, using clear and detailed language to convey explicit information, requirements and recommendations

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SKILL	DESCRIPTION
Teamwork	• Selects, implements and manipulates communications systems, processes and practices for maximum impact • Influences and fosters a collaborative culture, facilitating a sense of commitment and workplace cohesion • Understands diversity and seeks to integrate diversity into the work context, for managing change, making decisions and achieving shared outcomes
Planning and organising	• Operates from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation and identifying and addressing issues
Problem solving	• Uses a mix of intuitive and formal processes to identify key information and issues, evaluate alternative strategies, anticipate consequences and consider implementation issues and contingencies • Demonstrates use of intuition to identify general problem area when dealing with complex issues, switching to analytical processes to generate possible solutions, depending on differing operational contingencies, risk situations and environments
Self-management	• Develops and implements strategies so that organisational policies, procedures and regulatory requirements are being met • Monitors and reviews the organisation’s policies, procedures and adherence to legislative requirements in order to implement and manage change
Technology	• Demonstrates high level awareness of the importance of knowledge, monitoring and controlling access to digitally stored and transmitted information

Unit Mapping Information

Supersedes and is equivalent to ICTNWK614 Manage ICT security.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK623 Manage ICT security

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- establish and manage an information and communications technology (ICT) system and application security engineering program for a medium size network on at least occasion.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- business and commercial issues related to the management of ICT security
- critical analysis in a management context
- principles and techniques to manage ICT security, including:
  - continuity of operations (COOP)
  - systems development life cycle (SDLC).

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- ICT business specifications
- ICT security assurance specifications
- management related scenarios
- a security environment, including industry standard threats present in the environment
- information on the security environment, including:
  - laws or legislation
  - existing organisational security policies
  - organisational expertise
  - use of risk analysis tools and methodologies currently used in industry.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTOPN404 Test optical communications systems and components

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to test optical communications systems and components using advanced optical test equipment. It involves using the optical time domain reflectometer (OTDR), optical spectrum analyser (OSA) and optical return loss (ORL) test set for performance testing and link budget calculation.

It applies to cablers who combine technical skills with organisational and administrative skills. They may be installation contractors, technical staff and field officers from telecommunications carriers or other private and public organisations or regulatory authorities.

No licensing, registration, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

ICTBWN307 Use optical measuring instruments

Unit Sector

Telecommunications – Optical Networks

Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to use advanced optical	1.1 Notify customer for site access, security arrangements and location details of optical system and test purpose

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measuring instruments	1.2 Identify site hazards and notify appropriate personnel to make site safe 1.3 Devise and implement risk control measures for hazards and risks associated with handling optical fibres and lasers, in consultation with appropriate personnel 1.4 Prepare a testing plan indicating the type of measurement, procedures and nominated wavelength, and seek approval from customer 1.5 Select appropriate tools and test instruments according to required measurement and enterprise practice
2. Evaluate optical performance and link budget using advanced optical test equipment	2.1 Set-up test instrument according to manufacturer instructions, and work health and safety (WHS) and environmental requirements 2.2 Perform measurement and tests in a safe manner to evaluate performance of optical system and component 2.3 Record test results and compare with standard test specifications from manufacturer and enterprise guidelines 2.4 Perform end-to-end measurements on an optical link and record test results and test points 2.5 Calculate optical losses for a link budget figure of an optical link 2.6 Evaluate test results and report on functionality of optical component or equipment and performance of optical link
3. Document measurement results	3.1 Document test results for future reference and make recommendations for optimising component and system performance 3.2 Clean worksite and make safe according to enterprise requirements and customer satisfaction 3.3 Notify appropriate personnel of job completion for sign-off and present test documentation

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	**Description**
Reading	• Interprets textual information from relevant sources to plan, identify all job requirements and adhere to procedures and standards
Writing	• Accurately completes relevant reports and documentation using clear and technically specific language and numerical data
Oral Communication	• Uses listening and questioning skills to confirm understanding for requirements, participates in a verbal exchange of ideas and

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Skill	Description
	solutions, and uses appropriate, detailed and clear language to address key personnel and customers
Numeracy	• Uses mathematical formulae to gather and record technical measurements
Navigate the world of	• Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work context with specific reference to workplace safety • Understands main tasks, responsibilities and boundaries of own work
Interact with others	• Actively identifies requirements of important communication exchanges, selecting appropriate channels, format, tone and content to suit purpose and audience
Get the work done	• Takes responsibility for planning and organising own workload, identifying ways of sequencing and combining elements for greater efficiency • Takes responsibility for routine decision-making by selecting from a range of predetermined options in routine situations, identifying and taking some situational factors into account • Considers purpose, needs and limitations when selecting devices and applications for different tasks

Range of Conditions

Specifies different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Range is restricted to essential operating conditions and any other variables essential to the work environment.

Test equipment must include:	• optical time domain reflectometer (OTDR) • optical spectrum analyser (OSA) or equivalent optical spectrum analyser • optical return loss (ORL)
Measurements must include:	• optical power level • insertion loss of optical network • end-to-end fibre loss (bi-directional)
Optical performance must include:	• wavelength spectrum parameters • ODTR events

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Unit Mapping Information

No equivalent unit. Supersedes and is not equivalent to ICTOPN402 Use advanced optical test equipment.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTOPN404 Test optical communications systems and components

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills on two occasions and to:

- obtain operation documentation for advanced optical test instruments
- plan and prepare a schedule of tests to be performed
- conduct at least one optical test
- record the following measurements for a range of parameters:
  - optical power level
  - insertion loss of optical network
  - end-to-end fibre loss (bi-directional)
- test, calculate and document optical link budget according to industry standards using the following test equipment:
  - optical time domain reflectometer (OTDR)
  - optical spectrum analyser (OSA) or equivalent optical spectrum analyser
  - optical return loss (ORL)
- comply with all related work health and safety (WHS) requirements and work practices
- evaluate optical performance using:
  - wavelength spectrum parameters
  - ODTR events.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- optical system and its main components
- hazards and risks associated with optical systems
- health and safety and environmental requirements associated with optical systems
- common tests, measurements and testing plans used for optical systems

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- common wavelengths involved with optical systems
- use of tools and test equipment for optical systems
- consequences of mating contaminated optical connectors
- calculations using decibels, dBm
- downstream and upstream signals
- dense wavelength division multiplexing (DWDM) metro and long-haul system architecture
- measurement of:
  - DWDM signals
  - gain and gain flatness of optical amplifier
  - laser spectral stability, drift and unexpected variation in spectral transmission characteristics
- non-linear effects, four-wave mixing
- optical connector types
- optical signal to noise ratio (OSNR)
- optical spectrum limits, wavelengths used in various applications and International Telecommunication Union (ITU) grid
- optical transmitters and receivers
- optical return loss (ORL)
- OTDR dead zones, dynamic range and launch cable reflectance
- safe handling procedures with optical fibres
- transmission system line rates including:
  - optical ethernet
  - optical transport network (OTN)
  - synchronous digital hierarchy (SDH)
- wavelength division multiplexing (WDM), coarse wavelength division multiplexing (CWDM) and DWDM principles and optical multiplexers
- influence of legislation, regulations, codes and standards relevant to advanced optical work.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- tools and equipment required for measurements
- manufacturer documentation for test instruments and equipment under test.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTOPN405 Install and test a dense wavelength division multiplexing system

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to install dense wavelength division multiplexing (DWDM) equipment in optical networks.

It applies to technicians who interpret installation manuals and use technical skills to prepare for and conduct system tests and commissioning.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Optical Networks

Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to install DWDM units	1.1 Determine number of racks and DWDM units at each site according to installation documents 1.2 Determine DWDM unit and equipment positions within individual racks 1.3 Assemble equipment racks according to safe industry practice and manufacturer instructions 1.4 Select tools and equipment for DWDM unit installation 1.5 Prepare patch panels with connectors according to installation plan

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Element	Performance Criteria
2. Install DWDM units and associated cabling	2.1 Install DWDM unit in designated rack position to maintain planned link budget margin 2.2 Install patch panels and ancillary equipment and connections into equipment rack in preparation for commissioning procedures 2.3 Insert circuit cards into specified slot locations in readiness for commissioning procedures without seating cards into backplane or locking into position 2.4 Connect optical fibre cables between circuit cards, optical multiplexers, adjoining DWDM units and patch panels, according to manufacturer specifications 2.5 Seat cards into backplane and lock into position
3. Test power connections and complete installation report	3.1 Measure main and redundant power supplies to verify correct polarity of ground and power connections 3.2 Rectify any identified power wiring fault as required 3.3 Confirm cooling fans, panel lights, indicator lights and alarms behave according to manufacturer prescribed specifications when power is applied 3.4 Complete installation report and reinstate site

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Interprets textual information from relevant sources to identify and adhere to procedures and standards
Writing	• Uses clear, specific and industry related terminology to complete and update workplace documentation
Numeracy	• Uses mathematical formulae to calculate measurements and determine equipment requirements
Navigate the world of work	• Recognises and follows explicit and implicit protocols and meets expectations associated with own role • Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work context with specific reference to workplace safety

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Skill	Description
Get the work done	• Implements actions according to installation documents, making slight adjustments if necessary and addressing some unexpected issues • Takes responsibility for routine decision-making by selecting from a range of predetermined options in routine situations, identifying and taking some situational factors into account • Initiates standard procedures when responding to familiar problems within immediate context • Reflects on the ways digital systems and tools are used, or could be used to achieve work goals and begins to recognise strategic and operational applications

Unit Mapping Information

ICTOPN405 Install and test a dense wavelength division multiplexing system supersedes and is equivalent to ICTOPN401 Install and test a dense wavelength division multiplexing system.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTOPN405 Install and test a dense wavelength division multiplexing system

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills on two occasions and to:

- determine the dense wavelength division multiplexing (DWDM) requirements for a site
- install a DWDM system and associated cabling according to plans and specifications
- test installation for operation, power and ground connections
- analyse test results and rectify faults
- complete and submit an installation report.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- DWDM principles of operation and manufacturers guidelines
- risk management of electrostatic discharge
- optical fibre connector types and characteristics
- optical fibre types and characteristics
- specific work health and safety requirements that impact the safe measurement and inspection of optical connectors and optical power from laser transmission systems
- power wiring faults.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- tools and equipment requirement for installation
- a range of optical fibres to suit the installation.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTPMG201 Prepare site for support installation

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to prepare a site for support installation for aerial or underground cable, or for erection of radio towers or above ground or underground equipment enclosures.

It applies to individuals who can apply a broad range of competencies in a varied work context from installation to operation of telecommunications equipment and products.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – project management

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for installation	1.1 Confirm location of proposed installation is according to installation plan and relevant legislation, codes, regulations and standards

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	1.2 Recognise and report hazards 1.3 Obtain approvals and authorisations for work, and carry at all times during works 1.4 Inform landowner or tenant of imminent works 1.5 Locate adjoining services according to enterprise guidelines and work health and safety (WHS) practices 1.6 Clear site of vegetation and debris according to work specifications and any relevant approvals
2. Excavate site	2.1 Mark out proposed installation according to industry guidelines and site plans 2.2 Excavate using appropriate equipment for size of excavation and location of works, according to industry guidelines 2.3 Conduct levelling of site within tolerance specified in installation plan 2.4 Employ WHS practices and personal protective equipment, where appropriate, in manner intended by manufacturer
3. Complete administration	3.1 Note approved alterations on original plan and design using appropriate symbols, and return plan to originator 3.2 Complete and sign reports according to industry policy where required 3.3 Inform landowner or tenant of construction completion and expected next steps according to industry guidelines

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	**Description**
Reading	• Recognises and interprets various texts in a variety of forms to determine key information and specific requirements and responsibilities
Writing	• Develops material for a specific audience using clear and detailed language to convey explicit information, requirements and recommendations
Oral Communication	• Explains requirements using relevant language suitable for specific audiences

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Numeracy	• Interprets numerical information and applies basic mathematical calculations
Navigate the world of work	• Recognises and follows explicit and implicit protocols and meets expectations associated with own role • Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work context, with specific reference to workplace safety
Interact with others	• Uses appropriate communication modes for specific work task
Get the work done	• Plans and implements routine tasks to achieve requirements • Implements standard procedures to make routine decisions • Understands the purpose and specific functions of common digital tools used in some work contexts

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTPMG201 Prepare site for support installation (Release 2)	ICTPGM201 Prepare site for support installation (Release 1)	Updates to performance criteria, performance evidence and knowledge evidence. Updates to template to apply consistent format between units.	Equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPMG201 Prepare site for support installation

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- prepare and clear site for installation
- measure and mark out excavation location and levels
- safely excavate site
- obtain sign off, complete reports and record variations to plans.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- construction methods and performance requirements
- features and operating requirements of construction equipment
- legislation, codes of practice and other formal agreements that impact on the work activity
- manufacturer requirements for safe operation of equipment
- specific work health and safety (WHS) requirements relating to the activity and site conditions
- levelling and measuring procedures for marking out an excavation
- operation of tools and equipment suitable for site preparation and excavation

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- typical issues and challenges that occur on site
- communications strategies required when dealing with landowners and tenants.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- sites on which installations can be performed
- equipment and personal protective equipment
- relevant regulatory, organisational and equipment documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPMG301 Contribute as part of an IT project management team

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to contribute to Information and Communications Technology (ICT) project management teams.

It applies to those who, while working under a level of supervision, utilise a basic level of technical knowledge to plan, carry out and evaluate project work in a small or large office environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Project Management

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan and prepare to work in ICT project management team	1.1 Identify and confirm project management methodology required 1.2 Identify and confirm requirements of ICT project and team's responsibilities and roles 1.3 Contribute ideas and information in team planning discussions 1.4 Separate work tasks into individual components 1.5 Plan and prioritise task completion and discuss feedback and review cycles with required personnel

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ELEMENT	PERFORMANCE CRITERIA
2. Contribute to ICT project management activities	2.1 Perform work tasks according to organisational procedures and task completion plan 2.2 Record work task progression and completion according to organisational procedures and project management tools 2.3 Seek and provide assistance and feedback to ICT project management team members as required
3. Evaluate contributions to ICT project management and finalise work procedures	3.1 Confirm all work tasks have been adequately performed 3.2 Review and assess impact of contributions to ICT project management team and team performance 3.3 Report on contributions and submit to required personnel 3.4 Save, file and store information and dispose of materials according to organisational procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Oral communication	• Uses simple and relevant language to confirm task requirements, present information and obtain feedback • Communicates clearly and respectfully with team members, considering the needs of those from diverse backgrounds and roles
Writing	• Produces materials relevant to specific ICT project management team requirements and work tasks using applicable software
Teamwork	• Selects form, channel and mode of communication for a specific purpose relevant to own role, when communicating with others
Planning and organising	• Plans routine tasks with familiar goals and outcomes, taking some limited responsibility for decisions regarding sequencing and timing
Self-management	• Evaluates task completion and the impact of such completion, in line with project management team requirements
Technology	• Identifies the purposes, specific functions and key features of digital systems and tools, and operates them effectively to complete routine project management tasks

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Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPMG301 Contribute as part of an IT project management team

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- plan, carry out and evaluate two project work tasks, as part of an ICT project management team, using at least two different project management methodologies.

In the course of the above, the candidate must:

- use required project management tools and methodologies
- discuss and agree on frequency of team communication and feedback.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- project management methodologies, which may include:
- waterfall
- agile
- hybrid
- critical path method (CPM)
- critical chain project management (CCPM)
- integrated project management (IPM)
- PRiSM
- PRINCE2
- service and fixed projects.
- organisational procedures, including:
- work task prioritisation
- work task performance
- work task progression and completion

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- file saving and storage and material disposal
- ICT project management team role, structure and responsibilities
- ICT hardware and project management software required for work tasks.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- tools, equipment, materials and hardware required for ICT project management activities
- industry software packages required for ICT project management team work
- a range of simulated work tasks within ICT project management teams
- simulated working environment and project management team
- organisational procedure documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPMG411 Support small scale ICT projects

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to support the management of low risk, straight forward Information and Communications Technology (ICT) projects within an organisation.

It applies to individuals who work under a level of supervision but have responsibility to ensure workflow is planned and completed on time and in line with organisational and task requirements.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Project management

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Support project commencement	1.1 Identify applicable organisational policies and procedures 1.2 Identify stakeholders and project sponsor 1.3 Identify project objectives and gather requirements 1.4 Prepare project documents and obtain approval from project sponsor
2. Support project plan development	2.1 Break down requirements into individual project tasks 2.2 Identify and gather resources required for project 2.3 Compile schedule of project tasks 2.4 Allocate task responsibilities to project team members

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ELEMENT	PERFORMANCE CRITERIA
	2.5 Discuss and agree on risk management process with project sponsor 2.6 Finalise project plan and obtain sign off from required personnel
3. Support project completion	3.1 Discuss and confirm project activities meet timeframe, scope, cost and quality expectations with project team 3.2 Monitor and manage project risks and issues according to risk management procedures 3.3 Confirm all work tasks have been performed and project deliverables meet project requirements 3.4 Initiate and complete sign off 3.5 Present project to stakeholders and train stakeholders in project outcomes if required
4. Support project closure	4.1 Prepare ICT support and maintenance documents 4.2 Obtain final project sign-off from required personnel 4.3 Save and back up project documentation 4.4 Review and assess impact of support to small scale ICT project team performance 4.5 Document lessons learned and support project close

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Interprets and analyses text to gather detailed information and confirm requirements
Writing	• Prepares documentation recording project plan and lessons learned using required language and grammar in logical sequence to convey information
Oral Communication	• Uses effective verbal techniques to confirm requirements and present information using industry language for intended audience
Numeracy	• Formulates numerical assumptions and performs mathematical calculations required for task completion
Self- management	• Follows protocols and meets expectations applicable to own role
Teamwork	• Collaborates with others to achieve joint outcomes

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SKILL	DESCRIPTION
Planning and organising	• Sequences and schedules complex activities, monitors implementation and manages relevant communication
Problem solving	• Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information, and identifying and evaluating options against agreed criteria • Applies formal problem-solving processes when tackling unfamiliar problems, breaking complex issues into manageable parts and identifying and evaluating several options for actioning and managing risks

Unit Mapping Information

Supersedes and is equivalent to ICTPMG401 Support small scale ICT projects.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPMG411 Support small scale ICT projects

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- support the initiation, control and completion of two different simple small-scale ICT projects, on separate occasions.

In the course of the above, the candidate must:

- develop a project plan applicable to the individual project objectives, project requirements and project
- comply with requirements and expectations of a project plan
- document and save work.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- project documents, including:
  - project charter
  - project proposal
- project planning process, including:
  - realistic project timelines
  - project costs
- multiple project-management and planning methods and tools
- characteristics of technical teams required to support small scale ICT projects
- different methods of communication and communication styles required to support small scale ICT projects
- applicable organisational values, policies and processes
- risks associated with small scale projects including:

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- cost
- scope
- timelines.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- ICT equipment and materials required for supporting simple small-scale ICT projects
- industry software packages
- a range of simulated simple small-scale ICT projects
- stakeholders and project sponsor
- project plan and document templates.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPMG505 Manage ICT projects

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to manage the initiation, implementation and completion of reasonably complex Information and Communications Technology (ICT) projects incorporating scope, risk control, cyber security and financial factors.

It applies to those who use a range of specialised technical and managerial techniques to plan, carry out and evaluate their own work and the work of a team.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Project management

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Manage project definition activities	1.1 Confirm organisational project governance policy and processes 1.2 Confirm business problem, opportunity and project objectives according to organisational needs 1.3 Develop project charter, including preliminary statement of project scope and obtain sign-off with required personnel 1.4 Conduct feasibility study and prepare project business case 1.5 Document and submit business case and respond to feedback
2. Undertake project planning	2.1 Plan information gathering activities and determine project requirements, constraints and risks 2.2 Identify project partitioning according to intended system

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ELEMENT	PERFORMANCE CRITERIA
	development life cycle and risk 2.3 Prepare project work breakdown, schedule and budget 2.4 Compile project management plan documents, communicate required management strategy for project and obtain sign-off
3. Establish ICT project team	3.1 Identify and select team members, and allocate roles and responsibilities according to project solution requirements 3.2 Determine training and support needs of team members 3.3 Establish project team values and agreed behavioural standards with team members 3.4 Document team members, role allocation, training and support needs and project team values and agreed behavioural standards 3.5 Submit documentation to required personnel and seek and respond to feedback
4. Manage project execution activities	4.1 Monitor delivery and acceptance of assigned project team work activities and manage individuals according to project requirements 4.2 Monitor and control quality of project deliverables according to organisational quality control standards 4.3 Monitor and control project scope changes, risks and issues 4.4 Manage system testing and hand over activities according to project requirements
5. Coordinate project closure	5.1 Prepare IT support plans, maintenance and support documents 5.2 Obtain final project sign-off with required personnel 5.3 Conduct post project review and document outcomes 5.4 Review and update disaster recovery plan documentation 5.5 Save and back up project documentation and close project according to task requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Uses a wide range of mathematical calculations to interpret numerical information and to prepare and reconcile financial data
Oral communication	• Uses effective verbal techniques to confirm requirements, discuss information and conduct presentation using relevant industry language for intended audience

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SKILL	DESCRIPTION
Reading	• Evaluates complex text and addresses project requirements
Writing	• Prepares complex documentation detailing project management plan using required language and grammar in logical sequence to present ideas and recommendations
Teamwork	• Engages in fostering a collaborative culture within own sphere of influence, facilitating a sense of commitment and cohesion, and highlighting and using the strengths of those involved when establishing project team • Builds formal and informal networks to include key people and communities with expert skills and knowledge
Self-management	• Makes a range of decisions in relatively complex situations, taking a range of constraints into account when monitoring project and system testing • Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information, and identifying and evaluating options against agreed criteria when conducting post project reviews • Identifies and follows explicit and implicit protocols and meets expectations associated with own role

Unit Mapping Information

Supersedes and is equivalent to ICTPMG501 Manage ICT projects and ICTPMG802 Manage a telecommunications project.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPMG505 Manage ICT projects

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- scope and manage activities of a complex Information and Communications Technology (ICT) project, including:
  - preparing the project plan
  - determining project team and duties
  - executing the project
  - confirming requirements have been met
  - closing the project.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- key characteristics of leaders and technical teams relating to managing ICT project teams
- consultation and communication techniques and strategies relating to obtaining required ICT project information
- requirements and process for conducting a feasibility study
- process for preparing a business case
- process of establishing technical teams and determine stages of team development
- estimation and cost-analysis techniques
- methods of communication and communication styles, including interviewing techniques
- organisational values, policies and processes for project management
- performance management and project team appraisal methods
- processes for monitoring team and own performance
- project cash flow and budgeting processes
- project-management methods and tools relevant to managing ICT projects
- systems analysis and modelling techniques

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- team roles and delegation in a multi-project methodology context relevant to managing ICT projects
- key features of technology solution models and frameworks.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- office equipment, materials and industry software packages
- project outline and objectives brief
- equipment specifications.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTPMG612 Manage ICT project initiation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to initiate an Information and Communications Technology (ICT) project in small, medium and large organisations.

It applies to those who apply project management skills to establish the necessary foundation to facilitate successful delivery of agreed project outcomes.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Project management

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Define project	1.1 Define business problems and initial project scope according to organisational requirements 1.2 Identify key stakeholders and analyse stakeholder requirements 1.3 Define constraints that may impact project
2. Develop project business case	2.1 Identify and document project objectives and benefits 2.2 Identify and select feasible ICT solutions 2.3 Develop the business case according to organisational procedures 2.4 Present business case to required personnel and seek and respond to feedback

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ELEMENT	PERFORMANCE CRITERIA
3. Select project approach	3.1 Identify project core technology areas according to project requirements 3.2 Identify and document solution approach requirements 3.3 Negotiate project outcomes with required personnel
4. Establish ICT project team	4.1 Identify and select team members according to project requirements 4.2 Establish and document team member roles and responsibilities 4.3 Develop and document a cohesive technical team 4.4 Develop and document support plan for team members according to project requirements 4.5 Submit documentation to required personnel and seek and respond to feedback

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Tests viability of data by completing estimates and cost comparisons using relevant mathematical calculations
Oral communication	• Uses effective verbal techniques such as active listening, open-ended questioning and paraphrasing to articulate requirements and facilitate discussions and presentation using relevant industry language for intended audience
Reading	• Analyses complex textual data to ascertain requirements
Writing	• Prepares well-structured and cohesive documents presenting alternative views, evidence and recommendations, utilising technical and relevant industry language
Teamwork	• Invests time and energy in building rapport with others as an integral part of all work-based interactions • Plays a lead role in situations requiring effective collaboration, demonstrating high level influencing skills, focusing and shaping awareness, and engaging and motivating others • Shares knowledge, experience information and resources with others as an integral part of work relationships • Seeks to establish a climate in which it is possible to clarify and share the real needs and issues

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SKILL	DESCRIPTION
Planning and organising	• Sequences and schedules complex activities, monitors implementation and manages relevant communication
Self-management	• Demonstrates use of systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information, and identifying and evaluating options against agreed criteria • Uses formal analytical and lateral thinking techniques for identifying issues, generating and evaluating feasible ICT solutions • Selects ICT solutions, using strategic and operational analysis of digital trends • Identifies and follows explicit and implicit protocols and meets expectations associated with own role

Unit Mapping Information

Supersedes and is equivalent to ICTPMG602 Manage ICT project initiation.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPMG612 Manage ICT project initiation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- produce a comprehensive business case using an Information and Communications Technology (ICT) project implementation approach that considers core technology limitations and project constraints on at least one occasion.

In the course of the above, the candidate must:

- document processes and outcomes
- establish and work in a cohesive project team.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- characteristics of leadership and technical teams as it applies to managing ICT projects
- consultation and communication methodologies, styles and strategies, including interviewing techniques required when managing a project
- estimation and cost analysis techniques relating to managing ICT projects
- process of establishing technical teams and determining stages of team development
- process of setting objectives and conducting a benefits analysis
- organisational values, policies and processes that are applicable to ICT projects and teams
- project management methodologies and tools, and how they apply in a formal project management methodology
- process of determining team roles, and delegation process in a multi-project methodology context relating to managing ICT projects
- technology solution models and frameworks applicable to managing ICT projects.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- industry software packages
- organisation's deliverables and project scope
- organisation's unfulfilled legislative need.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTPMG613 Manage ICT project planning

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to plan and manage an Information and Communications Technology (ICT) project in small, medium and large organisations.

The unit applies to those who apply advanced project management skills in developing and documenting logical processes and timelines to ensure that projects are delivered according to organisational and stakeholder expectations.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Project management

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance critera describe the performance needed to demonstrate achievement of the element.*
1. Establish project control plans	1.1 Develop and document project management plan according to organisational requirements 1.2 Develop and document management sub-plans 1.3 Lodge documents according to organisational policies and procedures
2. Determine project methodology	2.1 Assess models of project management according to organisational requirements 2.2 Assess product development approach 2.3 Select project management and systems development methodology 2.4 Tailor and document methodologies to solution

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ELEMENT	PERFORMANCE CRITERIA
	requirements 2.5 Lodge documentation according to organisational policies and procedures
3. Develop project schedule	3.1 Develop project component breakdown according to project requirements 3.2 Estimate project effort and duration 3.3 Create project schedule and document according to organisational policies and procedures 3.4 Develop and allocate work packages 3.5 Establish schedule controls for monitoring project schedule
4. Finalise project budget	4.1 Identify areas of anticipated project spend 4.2 Determine dollar amounts and timing of cash flows 4.3 Develop and document project budget based on anticipated expenditure and cash flow 4.4 Establish controls for monitoring budget

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Uses sound mathematical assumptions and applies equations in developing cost-benefit analyses, budgets and cash flows
Reading	• Interprets and analyses complex text to ascertain requirements
Writing	• Prepares well-structured and cohesive documents presenting ideas and project plan utilising technical and relevant industry language in a logical sequence
Planning and organising	• Operates from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation, and identifying and addressing issues
Problem solving	• Uses nuanced understanding of context to recognise anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise
Self-management	• Sequences and schedules complex activities, monitors implementation and manages relevant communications • Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information, and

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SKILL	DESCRIPTION
	identifying and evaluating options against agreed criteria • Identifies and compares several options before making final choice, using a combination of lateral and analytical thinking to suit needs, resources and constraints

Unit Mapping Information

Supersedes and is equivalent to ICTPMG603 Manage ICT project planning and ICTPMG610 Develop a project management plan.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPMG613 Manage ICT project planning

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop and manage Information and Communications Technology (ICT) project plans on at least two occasions.

In the course of the above, the candidate must:

- select methodologies
- develop project schedules
- develop project budgets
- establish budgetary controls.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- current and emerging industry practice in relation to:
  - estimation techniques and methods
  - planning techniques and methods
  - project management methodologies
  - system development methodologies
- impact of business needs on project management, including implications for project control and expected returns on business investment.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

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This includes access to:

- industry software packages
- an organisation's identified problem, opportunity or unfulfilled legislative need.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTPMG614 Manage ICT project delivery

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to manage the creation and delivery of the products of an Information and Communications Technology (ICT) project in small, medium and large organisations.

The unit applies to those who manage teams and apply advanced project management, business and technical skills necessary to ensure that the project delivered is consistent with system requirements and agreed design.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Project management

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Manage systems analysis and design	1.1 Apply systems thinking to project design 1.2 Model ICT process and systems according to specifications 1.3 Re-engineer business processes according to specifications 1.4 Control required ICT systems development 1.5 Review ICT architecture against required specifications 1.6 Manage design and integration of system according to project requirements
2. Facilitate project-related workshops	2.1 Apply facilitation and problem-solving methodologies to enhance workshop outcomes

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Facilitate requirements gathering 2.3 Facilitate ICT design workshops according to task requirements
3. Manage ICT project team performance	3.1 Establish project team performance framework according to project requirements 3.2 Measure team member performance according to framework and metrics 3.3 Manage technical staff performance according to framework and metrics 3.4 Manage project team dissolution
4. Manage project delivery cycle	4.1 Delegate project work to project team members according to task requirements 4.2 Review and report status of project to required personnel 4.3 Assess progress and update plans according to task requirements 4.4 Control project issues and take corrective action 4.5 Update project control documents

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Oral communication	• Uses required language and style when presenting complex ideas to stakeholders to ensure project requirements are understood • Facilitates workshops using effective listening, questioning and summarising skills to convey information
Reading	• Interprets and analyses models, diagrams and specifications for inclusion into project requirements, plans and methodologies
Writing	• Prepares well-structured documents presenting ideas and delivery project plan utilising technical and relevant industry language in a logical sequence
Teamwork	• Shares knowledge, experience, information and resources with others as an integral part of work relationships when facilitating design workshops • Plays a lead role in situations requiring effective collaboration, demonstrating advanced influencing skills, focusing and shaping awareness, and engaging and motivating others

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SKILL	DESCRIPTION
Planning and organising	• Operates from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation, and identifying and addressing issues
Problem solving	• Uses nuanced understanding of context to recognise anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise
Self-management	• Sequences and schedules complex activities, monitors implementation and manages relevant communication • Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information, and identifying and evaluating options against agreed criteria • Uses formal analytical and lateral thinking techniques for identifying issues, generating and evaluating possible solutions

Unit Mapping Information

Supersedes and is equivalent to ICTPMG604 Manage ICT project delivery.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPMG614 Manage ICT project delivery

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- manage the analysis, design and delivery of Information and Communications Technology (ICT) projects on at least two occasions, including:
  - facilitating workshops for design development
  - managing project team performance
  - managing project delivery cycle.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- management methodology, including project management roles and responsibilities that relate to managing ICT project delivery
- problem-solving tools and techniques, including systems thinking, that relate to managing ICT project delivery
- information and communications technology (ICT) process models and their application
- key requirements of ICT design that relate to managing ICT project delivery
- business processes applicable to project.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- industry software packages
- an organisation’s identified problem, opportunity or unfulfilled legislative need.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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ICTPMG615 Manage ICT project closure

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to decommission or close an Information and Communications Technology (ICT) project in small, medium and large organisations.

The unit applies to project managers who use advanced project-management skills in undertaking a strategic assessment of the status of a project.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Project management

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Evaluate project performance	1.1 Collect project performance metrics according to organisational requirements 1.2 Debrief project team on project performance 1.3 Debrief project stakeholders 1.4 Summarise and document results according to organisational policies and procedures 1.5 Lodge documentation according to organisational requirements
2. Finalise project	2.1 Review project performance and determine if project should be continued, decommissioned or closed 2.2 Assess impact of continuing, decommissioning or closing

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ELEMENT	PERFORMANCE CRITERIA
	project 2.3 Recommend management action to required governing authority 2.4 Decommission or close project according to requirements
3. Action outstanding activities	3.1 Identify outstanding activities and create and document action plan 3.2 Assign responsibilities to action outstanding activities 3.3 Follow up on outstanding activities and confirm completion 3.4 Obtain final task sign off from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Analyses complex numerical information embedded in performance metrics
Oral communication	• Uses applicable language and style for intended audience to present information and facilitate debrief sessions, utilising active listening, questioning and summarising
Reading	• Analyses complex textual data to ascertain completion of project components and identify issues and root causes to facilitate formulation of required recommendation
Writing	• Prepares required documentation presenting ideas and information utilising technical and relevant industry language to stakeholders
Planning and organising	• Operates from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation, and identifying and addressing issues
Problem solving	• Uses nuanced understanding of context to recognise anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise
Self-management	• Sequences and schedules complex activities, monitors implementation and manages relevant communication • Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information, and identifying and evaluating options against agreed criteria

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Unit Mapping Information

Supersedes and is equivalent to ICTPMG605 Manage ICT project closure.

Links

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Assessment Requirements for ICTPMG615 Manage ICT project closure

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- manage at least one complex ICT project closure, including:
  - reviewing project documentation and project metrics
  - analysing project performance
  - recommending and planning decommissioning of project.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- role of project stakeholders relating to managing ICT project closure
- problem-solving techniques to address issues relating to project closure
- project management methods, practices and processes relating to project closure
- project performance metrics relating to managing ICT project closure.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- industry software packages.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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ICTPMG616 Manage ICT project systems implementation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to manage the system-implementation process in an Information and Communications Technology (ICT) project in small, medium and large organisations.

The unit applies to project managers who use advanced business management technical and communication skills to ensure that ICT projects are implemented with alignment to project and system development documentation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Project management

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for system implementation	1.1 Review required project and system development documentation 1.2 Determine organisational culture and document potential risks during implementation phases 1.3 Identify implementation options and constraints, and select required approach in consultation with stakeholders 1.4 Develop and document detailed implementation plan and training plan, and obtain sign-off from required personnel 1.5 Oversee creation of system user documentation guidelines and obtain sign-off from required personnel

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ELEMENT	PERFORMANCE CRITERIA
	1.6 Oversee preparation of operations documentation guidelines and obtain sign-off from required personnel
2. Manage organisational change	2.1 Submit system implementation plans to required personnel 2.2 Establish necessary support structures 2.3 Obtain plan sign-off from required personnel
3. Coordinate release management	3.1 Establish and confirm release management roles and responsibilities according to implementation plan 3.2 Determine release configuration items, including production system software, hardware and capacity changes required, and compile a request for change 3.3 Oversee creation of required test environment according to organisational requirements 3.4 Establish ongoing monitoring procedure to cover post-release warranty period 3.5 Undertake required data conversion activities
4. Manage acceptance testing	4.1 Review results of system test and confirm acceptance test entry criteria are met 4.2 Confirm test environment and ICT configuration management processes meet solution requirements and organisational standards 4.3 Oversee acceptance testing and collation of results 4.4 Confirm test results meet acceptance test exit criteria and obtain sign-off
5. Manage user training	5.1 Undertake and document training needs analysis 5.2 Review training plan and schedule and include required additional activities 5.3 Oversee preparation of training materials and confirm user training is conducted
6. Release system to production	6.1 Develop action plan and checklist for release activities according to task requirements and required deadlines 6.2 Create and document rollback strategy and plan to guide rollback of changes if required 6.3 Prepare communication to inform users of possible interruption to service due to the release 6.4 Manage installation of new release into production and confirm performance of operational verification tests and rollback changes if necessary 6.5 Review and update service level agreements (SLAs) and disaster recovery plan

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Oral communication	• Uses required language and style, and effective listening, questioning and summarising skills when presenting complex ideas, requirements and results to stakeholders
Reading	• Interprets and analyses complex textual information to ensure that all requirements are identified, understood and addressed
Writing	• Develops documentation presenting ideas, requirements and test results using appropriate structure, layout and relevant language
Planning and organising	• Operates from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation, and identifying and addressing issues • Develops flexible plans for complex, high-impact activities with strategic implications that involve a diverse range of stakeholders with potentially competing demands when preparing for system implementation • Sequences and schedules complex activities, monitors implementation and manages relevant communication when managing organisational change, coordinating release management, managing testing, user training and release of system to production
Problem solving	• Uses nuanced understanding of context to recognise anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise
Self-management	• Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information, and identifying and evaluating options against agreed criteria

Unit Mapping Information

Supersedes and is equivalent to ICTPMG608 Manage ICT project systems implementation.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPMG616 Manage ICT project systems implementation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- manage systems implementation on at least one occasion, including: communicating and establishing new structures in preparation for change
- coordinating release of new system
- managing system tests and acceptance
- managing training of users
- releasing system to production.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods and techniques of configuration management
- organisational policies and standards relating to information and communications technology (ICT) configuration management
- business analysis, processes and methodology relevant to managing ICT implementation projects
- project management and systems development processes, including potential risks associated with implementation activities
- structure and implications of disaster recovery plans and Service Level Agreements (SLAs)
- key features of a training needs analysis and its role in a training program
- purpose of a rollback strategy for an ICT project
- different team roles and responsibilities, including role of release manager.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- industry software packages
- project documentation
- relevant organisational documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPMG617 Plan and direct complex ICT projects

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to identify, plan, control and finalise complex information and communications technology (ICT) projects.

The unit applies to project managers who use advanced business and project management skills to oversee the effective and timely delivery of projects.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Project management

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify planning needs	1.1 Identify organisation's need for required complex ICT project 1.2 Identify project's strategic context and requirements 1.3 Identify organisation's strategic and business plans, and output requirements 1.4 Identify client requirements and impact of legislation, and industry codes and standards 1.5 Conduct risk management analysis and develop and document risk-management plan
2. Prepare ICT project plan	2.1 Define and document specifications, terms of reference and skills required for project 2.2 Identify and document project budget according to project

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ELEMENT	PERFORMANCE CRITERIA
	requirements 2.3 Define, document and secure resources required to support project 2.4 Develop and document timelines, schedules and critical path for project 2.5 Define and document stakeholder consultation strategy according to organisational requirements
3. Assemble ICT project team and commence work	3.1 Brief required personnel on project scope and respond to feedback given 3.2 Identify and communicate required reporting processes for team members
4. Manage IT project	4.1 Monitor project progress according to project plan requirements 4.2 Manage team member performance and confirm that output aligns to key performance indicators identified in project plan 4.3 Make required corrections, changes and additions to project plan 4.4 Monitor resourcing and make corrections to reflect changing circumstances 4.5 Report overall project progress to required personnel
5. Wrap up IT project	5.1 Finalise project in line with project plan 5.2 Conduct handover to required personnel according to organisational procedures 5.3 Debrief project team members on conduct and project outcomes 5.4 Prepare project report and analyse strengths and weaknesses of project plan
6. Identify policy and process improvements	6.1 Identify and analyse opportunities for organisational learning and required changes to processes and policies generated by project 6.2 Determine and document opportunities for future developments following project completion and submit to required personnel 6.3 Determine and document strategic impact of project and feed into organisation’s ongoing strategic planning processes 6.4 Lodge all documentation according to organisational procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Uses sound mathematical assumptions and applies equations in developing budgets
Oral communication	• Uses required language and style, and effective listening, questioning and summarising skills when presenting complex ideas, requirements and results to stakeholders
Reading	• Interprets and analyses complex textual information to ensure that all requirements are identified, understood, addressed and aligned with organisational strategic and operational plans
Writing	• Develops documentation presenting ideas, requirements and information using appropriate structure, layout and relevant technical language
Teamwork	• Plays a lead role in situations requiring effective collaboration, demonstrating advanced influencing skills, focusing and shaping awareness, and engaging and motivating others, including those who are geographically dispersed
Planning and organising	• Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information, and identifying and evaluating options against agreed criteria
Problem solving	• Sequences and schedules complex activities, monitors implementation and manages relevant communication • Uses formal analytical and lateral thinking techniques for identifying issues, generating and evaluating possible solutions • Identifies new approaches and enhances work practices and outcomes

Unit Mapping Information

Supersedes and is equivalent to ICTPMG609 Plan and direct complex ICT projects.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPMG617 Plan and direct complex ICT projects

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design, implement, manage and finalise a complex Information and Communications Technology (ICT) project.

In the course of the above, the candidate must:

- manage planning processes, scheduling, human resources, reporting and respond to contingencies
- align projects with organisational strategies and requirements
- assess outcomes and provide recommendations to refine and improve future ICT project management processes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- key features of risk management planning and processes
- computer software functions and operation, including relevant proprietary software relevant to planning direct complex ICT projects
- legislation, codes and standards relating to project specified in performance evidence
- contingencies for planning for time slippages
- sustainability requirements and ratings, including:
  - reporting mechanisms
  - conservation of energy
  - management of other resources
- tools and models of project management
- organisational frameworks and functions relevant to planning direct complex ICT projects including:

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- enterprises
- government bodies
- industry associations.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- computer software packages and hardware
- codes, standards and legislation relevant to jurisdiction and project
- project documentation
- research resources, including product information and data, and theoretical texts.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPRG302 Apply introductory programming techniques

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to create simple applications through introductory programming techniques.

It applies to those who have responsibility for creating applications and includes applying language syntax, control structures to create code, using programming standards, testing and debugging.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish application task	1.1 Clarify task with required personnel 1.2 Identify design specifications, programming standards and guidelines according to task requirements
2. Apply language syntax and layout	2.1 Apply basic language syntax rules 2.2 Create code using language data types, operators and expressions 2.3 Apply variables and variable scope 2.4 Use program library functions 2.5 Clarify meaning of code using commenting techniques
3. Apply control structures	3.1 Apply language syntax in sequence, selection and

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ELEMENT	PERFORMANCE CRITERIA
	iteration constructs 3.2 Create expressions in selection and iteration constructs using logical operators
4. Code using standard programming algorithms	4.1 Develop algorithms using sequence, selection and iteration constructs 4.2 Create and use data structures 4.3 Code standard sequential access algorithms used in reading and writing text files 4.4 Apply string manipulation
5. Test code	5.1 Examine variable contents and use debugging techniques to detect and correct errors 5.2 Create and conduct simple tests and confirm code meets design specification 5.3 Document actions carried out and results of tests performed
6. Create a simple application and seek feedback	6.1 Design an algorithm in response to basic program specifications 6.2 Develop application to meet program specification 6.3 Confirm application meets initial specifications 6.4 Present application to required personnel 6.5 Obtain feedback and sign off from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Oral Communication	• Uses listening and questioning techniques to confirm requirements and articulate complex concepts
Numeracy	• Confirms program specifications are met using mathematical formulae
Writing	• Writes and edits code and technical data in a logical manner using required syntax • Develops documentation outlining changes and tests performed using appropriate structure, layout and technical programming language
Planning and	• Takes responsibility for planning, sequencing and prioritising tasks

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SKILL	DESCRIPTION
organising	and own workload
Problem solving	• Analyses required outcomes and determines program code using problem-solving techniques • Uses a formal decision-making process, identifying and evaluating several choices against a limited set of criteria when selecting syntax • Evaluates decisions in terms of how well they meet stated design specifications
Technology	• Completes complex tasks using features of digital tools

Unit Mapping Information

Supersedes and is equivalent to ICTPRG301 Apply introductory programming techniques.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG302 Apply introductory programming techniques

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design and build one simple application according to programming standards and program specifications.

In the course of the above, the candidate must:

- apply programming language syntax, sequence, selection and iteration constructs
- document changes and tests performed
- review code according to feedback obtained during design and development of application.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- language data types, operators, expressions and variables
- basic language syntax rules
- sequence, selection and iteration constructs
- the development of small-sized applications
- industry programming standards and guidelines
- commenting techniques
- debugging techniques
- application testing methods
- basic data structures.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- programming standards and guidelines
- programming software
- required hardware and its components
- industry standard software development tools
- an integrated development environment (IDE).

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPRG429 Maintain open-source code programs

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to contribute as a member of an open-source software project community and to maintain open-source code.

It applies to those who work as open-source software developers who are required to build, test, distribute and maintain open-source software applications, as well as programmers who are responsible for integrating open-source components, tools and technologies into their applications.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Investigate open-source paradigm	1.1 Examine open-source paradigm and analyse differences with traditional software development models 1.2 Identify types of online resources, including open source communities 1.3 Investigate types of project documentation 1.4 Identify and analyse role of an online community and international collaboration 1.5 Examine motivational factors for contributors to open-source code 1.6 Analyse open-source licensing models

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ELEMENT	PERFORMANCE CRITERIA
2. Familiarise with target program	2.1 Identify open source target program requiring maintenance 2.2 Establish and confirm target program requirements and specifications 2.3 Examine online resources applicable to target program 2.4 Download executable binaries and install and run target program 2.5 Access and analyse supporting documentation
3. Prepare and perform support activities	3.1 Select and register with online community open-source group 3.2 Download snapshots of latest source code and supporting documentation according to organisational procedures 3.3 Build and execute a snapshot according to project requirements
4. Maintain code	4.1 Access project bug database and select bugs to be resolved and features to be added 4.2 Use applicable software-development tools and environment according to project requirements 4.3 Make changes to local copy of code and resolve selected bugs 4.4 Test resulting code and confirm identified bugs are resolved 4.5 Prepare and submit code patch to repository according to project requirements
5. Participate in community	5.1 Exchange messages with other project members and actively participate in community activities 5.2 Submit code and documentation code patches online 5.3 Access online project resources and identify project and community developments 5.4 Maintain and observe community-participation standards
6. Document and finalise project	6.1 Access project documentation according to organisational procedures 6.2 Prepare and contribute new information and updates using existing documentation 6.3 Submit documented changes to required personnel and obtain sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

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SKILL	DESCRIPTION
Oral Communication	• Uses listening and questioning techniques to articulate information and requirements using detailed language
Reading	• Interprets intermediate technical and non-technical, information from a range of sources
Writing	• Prepares documentation recording work performed and findings according to organisational procedures
Teamwork	• Collaborates with others and achieves required outcome • Selects and uses required conventions and protocols when conferring with community members
Problem solving	• Resolves technical and conceptual problems by applying analytical processes • Systematically gathers and analyses all required information and evaluates options in making informed decisions
Technology	• Uses digital technologies and locates and stores required information and communicates with others • Uses a range of sophisticated digital tools and techniques

Unit Mapping Information

Supersedes and is equivalent to ICTPRG401 Maintain open-source code programs.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG429 Maintain open-source code programs

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- install and run at least one open source code program according to organisational procedures.

In the course of the above, the candidate must:

- participate in at least one online open source code program community
- document program source code changes and additions
- build, modify and test code
- identify and resolve at least one bug
- test and confirm bug is fixed.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard software development models and tools
- open source licensing models and techniques
- debugging and testing techniques
- documentation techniques, including internal documentation, user guides and technical documentation
- open-source development methodology
- available online resources that may be used to maintain open-source code programs
- existing online project communities and their involvement in maintaining source codes.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- open source code projects and programming languages
- the internet.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPRG431 Apply query language in relational databases

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to retrieve and manipulate information stored in information systems using a query language.

It applies to those who are involved in a range of work environments, who are required to extract information from a relational database by creating and running queries.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine requirements of developing queries	1.1 Identify terminologies applicable to query language 1.2 Identify and build queries using required tools and environment
2. Write queries to extract required information	2.1 Sort and selectively retrieve values through query writing 2.2 Aggregate records by multiple attributes using an expression 2.3 Sort and filter aggregated records using an expression 2.4 Create queries and retrieve records from multiple tables 2.5 Retrieve records from multiple tables using different expressions and approaches 2.6 Filter records from multiple tables using an expression

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ELEMENT	PERFORMANCE CRITERIA
	2.7 Retrieve records from multiple tables using expressions, set operators and set logic 2.8 Construct and execute sub-queries
3. Perform calculations and use expressions in queries	3.1 Perform a calculation on numeric values and an operation on text values using an expression 3.2 Perform an operation on date and time values using functions 3.3 Aggregate values and obtain required output using an expression
4. Create and manipulate tables	4.1 Identify required columns, data types, keys, relationships, indexes and constraints 4.2 Use required naming conventions for database elements 4.3 Create tables that implement required elements and use check constraints 4.4 Manipulate tables according to specific requirements
5. Create and use views and stored procedures	5.1 Create views according to information requirements 5.2 Retrieve and save data using a view and transactions 5.3 Drop a view from a database 5.4 Retrieve, insert and modify data using created and stored procedures according to information requirements 5.5 Create and execute stored procedures using one or more parameters 5.6 Drop a stored procedure from database 5.7 Create and test database triggers and perform specific required data-related functions

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Makes basic calculations involving arithmetical operations • Makes estimates and comparisons involving date and time data
Reading	• Determines requirements by analysing and interpreting technical data
Writing	• Writes and edits code and technical data in a logical manner using required syntax

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SKILL	DESCRIPTION
Technology	• Stores and manages data using digitally based technologies and systems

Unit Mapping Information

Supersedes and is not equivalent to ICTPRG402 Apply query language.

Links

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Assessment Requirements for ICTPRG431 Apply query language in relational databases

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop, store and execute at least three queries, and retrieve and extract data at least three times
- perform at least three calculations using control statements, operators and functions
- prepare and manipulate at least three tables to meet specific requirements
- create and use at least two views and at least two stored procedures according to task requirements.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- information gathering methods that may be used to apply query language in relational databases
- industry standard database management systems (DBMS)
- methods of connecting to DBMS
- using data definition language (DDL), data manipulation language (DML) and data control language (DCL)
- data analysis techniques
- data mining
- data source characteristics
- information system features
- required systems and procedures that may be used to apply query language in relational databases.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- industry standard software packages
- required hardware and its components
- a data source
- resources in chosen query language
- documentation regarding client and functionality requirements
- resources to aid calculation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPRG432 Develop data-driven applications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to create data-driven applications that access data from a range of sources, including databases, object data sources and extensible mark-up language (XML).

It applies to those who work as programmers or database application developers and who are responsible for data-access coding.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish task requirements and select data-access layer (DAL)	1.1 Identify data and application requirements according to organisational procedures 1.2 Review function of required DAL in multi-layer application model 1.3 Determine data-access application programming interface (API) according to task requirements
2. Establish connection with data source	2.1 Create and manage connection strings according to task requirements 2.2 Connect data source using different data providers according to organisational procedures 2.3 Handle connection exceptions using code

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3. Execute commands and return results from data source	3.1 Query data from data source according to task requirements 3.2 Retrieve and manage results sets from data source 3.3 Manage exceptions when retrieving data
4. Modify and manage data in data source	4.1 Insert, update and delete data according to task requirements 4.2 Confirm data integrity 4.3 Manage exceptions when modifying data 4.4 Research disconnected data management strategy 4.5 Confirm application can manage disconnected data according to organisational procedures 4.6 Document code and database connectivity according to organisational procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Interprets complex technical documents and confirms outcomes are met
Writing	• Prepares documentation outlining changes according to organisational requirements
Initiative and enterprise	• Identifies opportunities to investigate potential new techniques and accesses data from various resources
Problem solving	• Identifies technical and conceptual issues and applies analytical processes in resolving issues
Technology	• Designs and creates complex models and codes using digitally based technologies and systems

Unit Mapping Information

Supersedes and is equivalent to ICTPRG403 Develop data-driven applications.

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Assessment Requirements for ICTPRG432 Develop data-driven applications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- create at least one data access driven application.

In the course of the above, the candidate must:

- select and code data-access layer of multi-layer applications
- retrieve and update data from at least one data source
- document all changes including code and database connectivity.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- features of object-oriented design and multi-layer applications
- relational database management systems, functions and tools
- data-access-layer (DAL) and its functions
- a range of application programming interfaces (API)
- different data providers and vendors
- object-oriented programming expressions and formulas at an intermediate level
- principles of Structured Query Language (SQL)
- organisational guidelines and procedures applicable in assisting the development of data-driven applications.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

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- integrated development environment (IDE)
- data access application program interfaces (APIs)
- required data-access layer (DAL)
- database management system software and files
- coding standards
- specific tools and licences, as required for particular data-access API
- different types of data-access methods including data retrieval and storage, back-end coding and disconnected data management.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPRG433 Test software developments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to prepare test plans, write test procedures and scripts according to test plans and maintain test plans and scripts.

It applies to those who are responsible for test plan preparation, execution, maintenance and reporting as well as defect management in the software development life cycle.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish testing requirements in software development	1.1 Identify testing required across software development life cycle 1.2 Discuss and confirm software development requirements with team members involved in software development project 1.3 Identify testing types and testing tools required 1.4 Discuss and define testing benefits, standards and terms 1.5 Identify organisational guidelines and frameworks related to testing
2. Prepare test plan document	2.1 Identify test and script requirements including data structures, and develop test 2.2 Analyse and identify test data using multiple test-case

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	design techniques 2.3 Define and design test cases 2.4 Document test plan and script according to organisational guidelines and industry standards
3. Write and execute test procedures	3.1 Choose and adopt unit test framework according to organisational procedures 3.2 Design and implement algorithm required in test procedures 3.3 Perform test executions according to organisational procedures
4. Review test results	4.1 Record and analyse test results 4.2 Discuss test results with team involved in software development life cycle 4.3 Produce and save test progress reports 4.4 Manage defects and review software, amending further defects

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	**DESCRIPTION**
Numeracy	• Writes and uses basic mathematical equations
Reading	• Interprets technical documentation and determines requirements
Writing	• Prepares workplace documentation outlining work performed according to organisational requirements
Teamwork	• Collaborates with others and gather ideas and perspectives and achieves required outcome
Planning and organising	• Takes responsibility for planning, sequencing and prioritising tasks and own workload
Problem solving	• Uses systematic, analytical processes and gathers required information when applying testing and debugging techniques
Technology	• Employs a range of sophisticated digital tools and techniques and meets desired outcomes

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Unit Mapping Information

Supersedes and is equivalent to ICTPRG404 Test applications.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG433 Test software developments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop at least one test plan that covers specific test requirements, according to organisational guidelines and industry standard test frameworks.

In the course of the above, the candidate must:

- apply at least three test case design techniques
- design, implement and execute a test procedure and a script using a unit test framework and an integrated development environment (IDE)
- create a test progress report according to recorded test results.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- applicable programming languages that may be used to test software developments
- input and output requirements and basic data structures that may be used to test software developments
- software development life cycle
- design techniques that may be used to test software developments
- processes, tools and techniques for testing small-size applications
- industry standard unit test frameworks
- organisational guidelines and procedures applicable to software development and software development testing frameworks
- defect management processes and documentation techniques that may be used to test software developments
- test-case design techniques.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a software development environment
- integrated development environment (IDE)
- specific test requirements including test-plan document
- code requiring testing
- software to create test plan and report
- required hardware and its components.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTPRG434 Automate processes

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to write scripts to automate solutions by using basic scripting processes and application-specific scripting options.

It applies to those who work in Information and Communications Technology (ICT) support roles and who are required to automate tasks.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish problem and applicable guidelines	1.1 Identify process requiring automation 1.2 Identify automation guidelines and instructions 1.3 Discuss and establish potential solutions and process ideas and requirements with team members
2. Develop algorithms and solutions to given problem	2.1 Develop an algorithm matching solution descriptions 2.2 Develop algorithm that takes all possible situations into account and is guaranteed to terminate 2.3 Describe algorithmic solutions in identified problem using structures of sequence, selection and iteration
3. Design and write script	3.1 Create required abstract design 3.2 Review abstract design and amend any omissions and

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	errors 3.3 Translate abstract design using chosen language according to organisational guidelines 3.4 Create and write script and code according to design and process requirements 3.5 Create internal documentation according to organisational guidelines and policies
4. Verify and review and document script and code	4.1 Check script and code and amend syntax and semantic errors 4.2 Identify any areas that are not covered and any areas that have been covered incorrectly in script and code 4.3 Confirm identified problems with team members and resolve as required 4.4 Create and finalise user-level and technical level documentation 4.5 Seek feedback and obtain sign-off from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	**DESCRIPTION**
Numeracy	• Interprets and manipulates, complex formulae and numerical information
Reading	• Analyses complex technical documentation and amends any inconsistencies and errors
Writing	• Completes code and workplace documentation using vocabulary and form applicable to context and audience
Teamwork	• Collaborates with required personnel, gathers more perspectives and increases quality of final outcome
Problem solving	• Uses systematic analytical processes and reviews and identifies coding errors
Technology	• Uses a range of digital technologies and systems to access information, search and enter data, code and presents information and communicates with others, cognisant of data security and safety

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Unit Mapping Information

Supersedes and is not equivalent to ICTPRG405 Automate processes.

Links

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Assessment Requirements for ICTPRG434 Automate processes

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop at least one algorithmic statement of a solution for a set process according to organisational guidelines.

In the course of the above, the candidate must:

- produce a functional script to automate a set process
- document script for internal and external stakeholders.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- debugging methods that may be used to automate processes
- principles of algorithms and their application in programming
- scripting language syntax and scripting techniques that may be used to automate processes
- script documentation methods at a user and technical level
- organisational guidelines and policies applicable in automating processes.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- applications capable of being scripted, or having their own scripting language
- templates for automating processes
- executable scripts
- debugging tools

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- required hardware and its components.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTPRG435 Write scripts for software applications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to plan, design and build scripts, using a scripting language to construct highly interactive and automated software applications.

It applies to those who build and integrate interactive applications or websites for internal or public sites. They may work as application developers, application-support personnel, programmers specialising in a scripting language, web application programmers, or web developers.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Specify software application requirements	1.1 Identify required software application outcomes 1.2 Discuss expectations of final software application with required personnel
2. Determine script requirements	2.1 Identify main characteristics of scripting languages 2.2 Identify integrated development environment (IDE) 2.3 Identify protocols and object model used in chosen scripting language
3. Design and build scripts	3.1 Create pseudo code and describe logic required in script 3.2 Review pseudo code and amend missing logic and errors

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	3.3 Translate pseudo code into scripts, incorporating use of basic language elements 3.4 Incorporate item manipulation using chosen scripting language
4. Finalise scripts	4.1 Create internal documentation in script according to organisational procedures 4.2 Review, debug and document script according to organisational procedures 4.3 Finalise, save and confirm work with required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Applies applicable strategies and constructs meaning from requirements and technical documentation • Interprets and critically analyses, complex scripting language texts and pseudo code when reviewing and amends missing logic, error and bugs
Oral Communication	• Uses listening and questioning techniques to confirm information and requirements using industry language for intended audience
Writing	• Selects vocabulary, grammatical structures and conventions applicable to text when documenting script and using pseudocode
Planning and organising	• Considers purpose, needs and limitations when selecting a framework and IDE in script building
Problem solving	• Uses systematic, analytical processes, identifying and evaluating scripting language texts and pseudo code

Unit Mapping Information

Supersedes and is equivalent to ICTPRG407 Write script for software applications.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG435 Write scripts for software applications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design, write and integrate at least one script into software solutions to accommodate specified application requirements.

In the course of the above, the candidate must:

- test and debug scripts
- use required framework and an integrated development environment (IDE) in developing scripts.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- software development platforms
- organisational and legislative requirements applicable to writing script for software applications
- software development life cycle methodology and process
- integrated development environment (IDE)
- scripting languages
- processes and techniques related to development of small-size applications.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a brief for development of a small-sized application runtime environment

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- the development environment
- scripting language.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPRG436 Develop mobile applications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to develop, debug, test and deploy applications for hand-held devices using development platform environments.

It applies to those who are involved in programming and software development and have responsibility for creating applications in small to medium businesses.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Define platform	1.1 Establish task and features required in mobile application 1.2 Determine target platform for hand-held device according to task requirements 1.3 Choose and evaluate development environment according to target platform and hardware 1.4 Prepare and configure application development environment
2. Design, integrate, build and customise mobile application	2.1 Create views and confirm functionality in different screen orientations and resolutions 2.2 Integrate required navigation techniques according to user needs

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	2.3 Design page layout and content according to organisational guidelines 2.4 Integrate required user input techniques and functionalities 2.5 Build user interface according to development environment and functionality 2.6 Write code to allow users to configure application output, including text size, brightness and sound effects
3. Connect to data sources	3.1 Bind controls to data sources 3.2 Persist and access remote data
4. Test and debug mobile device application	4.1 Test mobile application according to functionality requirements 4.2 Iterate application design and build, until test results meet requirements 4.3 Seek feedback from required personnel and respond accordingly
5. Deploy mobile device application and finalise documentation	5.1 Create application packaging used in deployment 5.2 Use application on target devices 5.3 Document deployment procedures and obtain sign-off from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	**DESCRIPTION**
Numeracy	• Extracts and evaluates mathematical information embedded in a range of tasks and texts when designing layout • Selects from and applies an expanding range of mathematical and problem-solving techniques when designing layout
Reading	• Interprets and critically analyses complex texts when choosing and evaluating development environment
Writing	• Prepares documentation detailing deployment procedures according to organisational requirements • Writes and edits code and technical data in a logical manner using required syntax
Initiative and enterprise	• Identifies concepts, principles and features of approaches in other contexts and redesigns these according to situation

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SKILL	DESCRIPTION
Planning and organising	• Uses systematic processes, setting goals, gathering information and identifies and evaluates options against agreed criteria
Problem solving	• Identifies and explicitly applies some basic principles of analytical and lateral thinking • Decides on a course of action using analytical processes
Technology	• Applies principles, concepts, language and practices applicable to digital world

Unit Mapping Information

Supersedes and is equivalent to ICTPRG409 Develop mobile applications.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG436 Develop mobile applications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop at least one mobile application using a platform and development environment according to task requirements.

In the course of the above, the candidate must:

- determine, prepare and configure a development environment
- design and build a user interface
- test and debug application and confirm task requirements are met.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- programming considerations of mobile device hardware and networking
- applicable programming languages and frameworks
- programming constructs used in interacting with mobile applications
- constraints of different digital devices
- user-interface design principles and implementation methods applicable to developing mobile applications
- organisational guidelines and procedures applicable to developing mobile applications
- industry standard mobile and digital platforms.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

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- mobile and digital devices and simulators
- integrated development environment (IDE)
- the internet
- server system with sufficient privileges to deploy applications
- platform and its tools
- required hardware and its components.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPRG437 Build a user interface

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to design, build and test a user interface (UI) to specification, including command-line interfaces (CLI), graphical user interfaces (GUI), web user interfaces (WUI) and natural user interfaces (NUI).

It applies to those who work as user-interface designers and are responsible for specifying the layout and style of the desired user interface. This includes developers working in the area of user interface design and implementation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish task requirements and build a prototype user interface (UI)	1.1 Gather UI requirements and expectations from clients 1.2 Identify organisational guidelines relating to task 1.3 Determine application required to create prototype 1.4 Build prototype using prototyping tools in determined language 1.5 Review UI prototype with client and edit as required
2. Design and build UI	2.1 Formulate application content flow 2.2 Design UI components according to task

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	requirements 2.3 Define UI actions 2.4 Itemise UI events 2.5 Determine required language according to task requirements 2.6 Build UI with required functionality according to task and organisational requirements
3. Test and document UI, and obtain client sign-off	3.1 Test overall functionality of UI according to requirements 3.2 Iterate UI design and build, until test results meet requirements 3.3 Document UI and user requirements according to organisational procedures and guidelines 3.4 Obtain client sign-off to completed UI

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	**DESCRIPTION**
Numeracy	• Selects from, and applies a range of mathematical and problem-solving techniques
Oral communication	• Uses listening and questioning techniques to confirm requirements and articulate complex concepts and take lead where required
Reading	• Applies strategies and constructs meaning from texts when reading technical data
Writing	• Develops documentation detailing UI design and user requirements using appropriate structure, layout and technical programming language
Planning and organising	• Uses a combination of formal, logical planning processes and increasing knowledge of context • Identifies applicable information and risks and evaluates alternative strategies and resources when gathering requirements • Uses systematic processes, setting goals, gathering information and identifying and evaluating options against agreed criteria
Problem solving	• Decides on a course of action using analytical processes
Self-management	• Identifies and follows explicit and implicit, protocols and meets expectations applicable to own role when documenting user requirements and gaining sign-off

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SKILL	DESCRIPTION
Technology	• Actively identifies systems, devices and applications with potential to meet current and future needs • Improve personal productivity and optimises software functions using a broad range of features within applications

Unit Mapping Information

Supersedes and is equivalent to ICTPRG410 Build a user interface.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG437 Build a user interface

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design and build at least one fully functional user interface (UI).

In the course of the above, the candidate must:

- comply with organisational requirements
- document the user requirements, UI and obtain client sign-off.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- a range of mathematical strategies that may be used in building a user interface activity
- programming languages that may be used in building a user interface
- open-source development tools
- small-size application development process
- application development languages and required prototyping tools
- organisational guidelines relating to user interface building.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- the internet
- online prototyping and UI design tools
- required hardware, software and its components
- specific tools and licenses available, according to selected platform.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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ICTPRG438 Configure and maintain databases

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to install a database, manage data, data access and data security and improve database performance.

It applies to those who are responsible for the maintenance and coordination of database operations. They usually work in an organisation providing daily services as database administrators, database developers, database coordinators, or application developers.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine requirements and install database system	1.1 Identify required database and components and user needs 1.2 Define and use database administrative tools according to database requirements 1.3 Verify database software installation prerequisites 1.4 Install database software and related services according to organisational procedures 1.5 Configure database instance, components and services according to user needs
2. Manage database security and integrity	2.1 Create and administer users according to task requirements

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	2.2 Create and manage permissions and roles 2.3 Configure database including backup and recovery operations 2.4 Create and manage database backups 2.5 Restore and perform database recovery 2.6 Tune and perform database optimisation
3. Document and review database	3.1 Document maintenance and tuning work performed on database 3.2 Document users added to system 3.3 Review database and confirm required users have access

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Applies strategies and constructs meaning from technical specifications when identifying database components and defining tools
Writing	• Develops documentation detailing work performed and added users using appropriate structure, layout and technical programming language
Problem solving	• Uses systematic processes, gathering information and identifying and evaluating options against agreed criteria • Decides on a course of action using analytical processes
Self-management	• Seeks clarification when meanings and intended actions are open to interpretation when verifying prerequisites
Technology	• Identifies key principles and concepts underpinning design and operation of digital systems and tools and applies these when troubleshooting database technology • Improve personal productivity and optimises software functions using a broad range of features within database applications

Unit Mapping Information

Supersedes and is equivalent to ICTPRG412 Configure and maintain databases.

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Assessment Requirements for ICTPRG438 Configure and maintain databases

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- configure and maintain at least one database system, according to requirements.

In the course of the above, the candidate must:

- create backup and restore database above
- document database work and database users added.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- database design principles
- relational database principles
- hardware functions and components that may be used to **co**nfigure and maintain databases
- connection methods to database management systems
- documentation techniques that may be used to document database work
- uses of structured query language (SQL).

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- the database-management system software
- specific requirements, including client and functionality requirements
- required hardware and software.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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ICTPRG439 Use pre-existing components

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to identify, evaluate and incorporate pre-existing (re-use) components from a library, or other source, as part of a software project.

It applies to those who work in a programming role in a variety of information technology areas, who are required to use programming libraries to support their work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify potential re-use components	1.1 Analyse project design and required functionality 1.2 Source re-use components according to required functionality
2. Evaluate and select re-use components	2.1 Evaluate suitability of re-use component and libraries 2.2 Compare functionality of re-use components according to functionality required by parent project 2.3 Clarify technical impact on parent project design 2.4 Identify re-use component vendor licensing agreements, requirements and costs 2.5 Finalise and document selection, evaluation and decision processes according to organisational requirements

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3. Incorporate re-use components into parent projects	3.1 Configure development environment and include re-use components during build process 3.2 Construct test programs or use provided example programs according to organisational guidelines and procedures 3.3 Add re-use components incrementally to parent project 3.4 Resolve re-use component dependencies according to task requirements 3.5 Assemble and test parent project according to functionality provided by re-use components 3.6 Review parent project and amend issues accordingly

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Selects from, and applies a range of mathematics and problem-solving techniques when evaluating costs
Reading	• Identifies and interprets technical and organisational documentation to determine and confirm job requirements
Writing	• Develops documentation selection, evaluation and decision processes according to organisational requirements using appropriate structure, layout and technical programming language
Problem-solving	• Decides on a course of action using analytical processes • Uses systematic and analytical processes in complex non-routine situations, setting goals and gathering information
Technology	• Improve personal productivity and optimises software functions using a broad range of features within applications • Interprets key principles and concepts underpinning the design and operation, of digital systems and tools and applies these to troubleshoot technology

Unit Mapping Information

Supersedes and is not equivalent to ICTPRG413 Use a library or pre-existing components.

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Assessment Requirements for ICTPRG439 Use pre-existing components

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify, evaluate and select at least two existing components to be re-used in a software project.

In the course of the above, the candidate must:

- identify costs of incorporating existing components
- address technical impacts and vendor licensing issues
- document selection and evaluation processes
- test functionality of pre-existing components
- comply with organisational guidelines and procedures.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry development and design methodologies
- re-use component licensing agreements, requirements and implementation costs
- project designs that may assist in using pre-existing components
- library content and structures
- documentation techniques used to document selection, evaluation and decision processes
- project testing methods that may assist in determining pre-existing components
- re-use component dependency and version compatibility
- repository tools applicable to using pre-existing components
- organisational guidelines and procedures applicable to using pre-existing components.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- software development environment
- libraries and re-use components
- vendor licensing agreements
- technical requirement guidelines
- required hardware and its components.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPRG440 Apply introductory programming skills in different languages

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to carry out introductory programming activities including application of basic language syntax, coding and debugging code in different languages.

It applies to those who work in programming, development and technical roles. This includes programmers, software developers and as IT staff responsible for conducting programming activities, including writing, maintaining and updating programs, defining data and file handling.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Apply basic language syntax and layout	1.1 Identify basic language syntax rules 1.2 Use language data types, operators and expressions 1.3 Use sequence, selection and iteration constructs using required language syntax
2. Code using data structures and standard algorithms	2.1 Use data structures 2.2 Create and manipulate data structures through code 2.3 Create sequential search, binary search, insertion and

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	deletion algorithms on data structures
3. Debug, document and test code	3.1 Debug code using stand-alone debugging tools and tools provided by integrated development environment (IDE) 3.2 Trace code execution and examine variable contents using debugger 3.3 Develop maintainable code according to organisational guidelines and provided coding standard when documenting activities 3.4 Apply internal documentation to all code created using documentation tools available in target language 3.5 Design and document tests according to organisational guidelines 3.6 Capture and record test results according to organisational requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	**DESCRIPTION**
Reading	• Interprets and critically analyses and applies strategies and constructs meaning from complex texts
Writing	• Prepares documentation recording process and results for tests performed according to organisational requirements • Writes and edits code and technical data in a logical manner using required syntax
Problem solving	• Decides on a course of action using analytical processes
Self-management	• Takes personal responsibility and follows explicit and implicit policies, procedures and industry standards • Automatically implements standard procedures in routine decisions when programming according to guidelines and standards
Technology	• Interprets key principles and concepts underpinning the design and operation of digital systems and tools

Unit Mapping Information

Supersedes and is equivalent to ICTPRG414 Apply introductory programming skills in another language.

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Assessment Requirements for ICTPRG440 Apply introductory programming skills in different languages

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- create, maintain and update at least one program using coding activities, basic language syntax and layout.

In the course of the above, the candidate must:

- write code using at least two data structures and at least two standard algorithms according to organisational guidelines
- debug at least one program written above using debugging tools provided by integrated development environment (IDE)
- document activities undertaken in at least one program developed above according to organisational guidelines and coding standards
- test program created above and confirm specifications are met
- record results for tests performed above, according to organisational guidelines.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- language syntax rules
- organisational procedures and guidelines that may be used to apply introductory programming skills in different languages
- coding techniques and standards
- documentation techniques that may be used to document programming activities
- application development processes, debugging methodologies, testing techniques and basic data structures guidelines that may be used to apply introductory programming skills in different languages.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- integrated development environment (IDE) for determined language
- specific tools and licences, depending on particular platform and language.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTPRG441 Apply skills in object-oriented design

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to produce an object-oriented design from specifications, applying the cyclic process of iteration from identification of class, instance, role and type to the final object-oriented model of the application.

It applies to those who are required to design systems using an object-oriented method.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Derive high-level design from specification	1.1 Gather and determine specifications in object-oriented design 1.2 Create static class diagram according to given set of specifications 1.3 Develop communication diagrams and sequence diagrams according to given set of specifications 1.4 Develop activity diagram and state diagram using given set of specifications
2. Refine design	2.1 Investigate and refine behaviour, state of classes and collaboration between classes 2.2 Validate visibility of class services and state data 2.3 Identify generalisations and specialisations within classes

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	2.4 Refine class design and apply aggregation and composition principles
3. Document design	3.1 Create detailed unified modelling language (UML) static class diagrams 3.2 Develop detailed UML communication and sequence diagrams 3.3 Create detailed UML activity and state diagrams

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Interprets and critically analyses and applies strategies to construct meaning from specifications
Writing	• Prepares required documentation expressing ideas and information for specific audiences according to organisational procedures
Problem-solving	• Decides on a course of action using analytical processes • Uses systematic, analytical processes in predictable and unpredictable situations, setting goals, gathering information and identifying and evaluating options against agreed criteria when refining design
Technology	• Interprets key principles and concepts underpinning the design and operation of digital systems and tools

Unit Mapping Information

Supersedes and is not equivalent to ICTPRG415 Apply skills in object-oriented design.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG441 Apply skills in object-oriented design

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- produce one object-oriented design from requirements, documents and system specifications, which includes:
  - static class diagrams
  - communication and sequence diagrams
  - activity and state diagrams
  - diagrams mentioned above using unified modelling language (UML)
  - refining class design
  - documentation of design.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- design quality metrics, refinement techniques and programming design principles that may be used for applying skills in object-oriented design
- unified modelling language
- different programming methodologies, documentation techniques and development methodologies that may be used for applying skills in object-oriented design.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- programming design software, tools and licenses
- required hardware and its components

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- system specifications
- requirement documents
- design specifications.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTPRG442 Apply mathematical techniques for software development

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to use basic mathematical methods and operations in standard computer notation, Boolean algebra, data types and computer storage.

It applies to those who are involved in software development roles who are required to use mathematical constructions in programming.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish task requirements	1.1 Identify and configure software development environment according to business need 1.2 Discuss and confirm software development task and intent according to business need 1.3 Identify and discuss different mathematical techniques in software development
2. Manipulate number and character	2.1 Convert numbers between binary, decimal

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ELEMENT	PERFORMANCE CRITERIA
representation systems in a software development context	and hexadecimal number systems 2.2 Add, subtract and multiply numbers in binary 2.3 Determine binary memory storage of an integer and a character
2. Manipulate algebraic terms and solve linear equations in a software development context	3.1 Position number types on number line 3.2 Evaluate various numerical expressions involving integers, fractions and indices 3.3 Simplify various algebraic expressions involving integers, fractions and indices
4. Construct, simplify and evaluate expressions and mathematical formulas in a software development context	4.1 Solve simple equations 4.2 Convert formulas between standard algebraic form and computer notation 4.3 Create formulas in standard algebraic form and in computer notation 4.4 Simplify and evaluate Boolean expressions and formulas 4.5 Complete truth tables using simple Boolean expressions and logic 4.6 Save and confirm work with required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Oral communication	• Uses listening and questioning techniques to articulate information and task requirements using specific language applicable to audience
Numeracy	• Uses a wide range of mainly formal and some informal, oral and written mathematical language and representation when solving equations, constructing mathematical formulas, simplifying and evaluating Boolean expressions and formulas and manipulating number and character systems
Reading	• Interprets and critically analyses information from a variety of sources and records
Planning and	• Plans and sequences complex tasks

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SKILL	DESCRIPTION
organising	
Problem solving	• Uses analytical processes and decides on a course of action when evaluating Boolean expressions and formulas

Unit Mapping Information

Supersedes and is equivalent to ICTPRG417 Apply mathematical techniques for software development.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG442 Apply mathematical techniques for software development

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- manipulate algebraic terms and evaluate at least three numerical expressions in software development
- solve and evaluate at least three different mathematical problems
- create at least two mathematical formulas in standard algebraic form and at least two mathematical formulas in standard computer notation
- simplify and evaluate at least two Boolean expressions and formulas
- convert two sets of numeric values between binary, decimal and hexadecimal number systems as required in software development.

Knowledge Evidence

elements, performance criteria and foundation skills of this unit, including knowledge of:

- Boolean algebra, number types, numerical and algebraic expressions, simple equations and standard computer notation that may be used to apply mathematical techniques for software development
- binary, decimal and hexadecimal number systems
- memory requirements for different number formats including binary, integer, decimal and negatives
- mathematical terms application and operations in computing
- calculation tools available
- organisational procedures impacting on applying mathematical techniques for software development.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

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This includes access to:

- programming language, tools and licensing
- software development tools and environment
- hardware components and required software.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPRG443 Apply intermediate programming skills in different languages

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to carry out intermediate programming activities involving coding, debugging and testing of code, and creating applications using different programming languages.

It applies to those who are programmers in a variety of fields and are required to conduct programming activities and produce software programs.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish task requirements and define data structures and code	1.1 Establish user requirements and specifications 1.2 Design, define and use data structures that are aggregate of other data types 1.3 Code using user-defined data structures 1.4 Create, manipulate and destroy dynamic variables, including data structures, using facilities in language
2. Code using standard algorithms	2.1 Code using modular programming approach, including pass-by-reference parameter passing 2.2 Create and manipulate 2-D data structures using code

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ELEMENT	PERFORMANCE CRITERIA
	2.3 Create and maintain sorted data structures and use language-provided facilities 2.4 Code using simple binary search technique 2.5 Code binary file-handling solutions using random-access algorithms
3. Debug, document and test code	3.1 Use stand-alone debugging tools and tools provided by integrated development environment (IDE) 3.2 Trace code execution and examine variable contents using debugger 3.3 Develop and document maintainable code according to organisational guidelines and coding standards 3.4 Apply internal documentation to code using documentation tools available in target language 3.5 Design and document tests according to organisational guidelines 3.6 Test produced code and confirm compliance with program specification 3.7 Capture and record test results
4. Develop, test and document files and application	4.1 Build application according to user requirement 4.2 Access multiple source-code files 4.3 Employ integrated development environment (IDE) project maintenance facilities and automate program building using created files 4.4 Develop program specification solution according to coding standards 4.5 Design algorithm and document, construct and test applications according to problem description using target language 4.6 Document completed application according to organisational procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Interprets and applies applicable strategies and constructs meaning from texts relating to organisational guidelines and coding standards

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SKILL	DESCRIPTION
Writing	• Prepares required documentation expressing ideas and information for specific audiences according to organisational procedures • Writes and edits code and technical data in a logical manner using required syntax
Problem solving	• Decides on a course of action using analytical processes • Identifies possible solutions to difficult problems using a systematic process
Self-management	• Takes personal responsibility and follows explicit and implicit policies, procedures and industry standards • Uses systematic processes, setting goals, gathering required information and identifying and evaluating options against agreed criteria
Technology	• Interprets key principles and concepts underpinning the design and operation of digital systems and tools

Unit Mapping Information

Supersedes and is not equivalent to ICTPRG418 Apply intermediate programming skills in another language.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG443 Apply intermediate programming skills in different languages

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design and build an application in response to user requirements and specifications.

In the course of the above, the candidate must:

- code using user-defined data structures and standard algorithms
- develop a maintainable code
- design a test for code and record and document test results
- produce a technical documentation of activities and completed application.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- dynamic variables
- modular programming approach to coding
- medium-size application development processes
- data structures including but not limited to:
  - lists
  - arrays
  - linked lists
  - stack
  - queues
  - trees
  - graphs
  - sets
  - hash tables

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- random-access algorithms
- user-defined data structures
- project maintenance and required language-provided facilities
- development methodologies and their application
- organisational guidelines and coding standards applicable to applying intermediate programming skills
- programming methodologies
- documentation techniques and tools within target languages that may be used to apply intermediate programming skills in different languages
- debugging tools and methodologies
- code testing procedures.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- an integrated development environment (IDE) for determined language and its tools and licenses
- coding standards
- user requirements and specifications
- technical requirements
- required hardware and its components.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPRG444 Analyse software requirements

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to research and analyse client requirements, produce a range of options for business process efficiencies and create a software-requirements document.

It applies to those who are required to perform an analysis role in formulating software requirements in a range of work environments. They may work as database or computer developers, business analysts, or project managers.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Gather and confirm client requirements	1.1 Confirm requirement and scope of project with required personnel 1.2 Gather information regarding requirements via sources of information and business processes 1.3 Analyse client requirements and problem context and opportunity faced by client 1.4 Document client requirements, project scope, related problems and sources of information according to organisational procedures 1.5 Submit document to required personnel and seek

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	and respond to feedback
2. Analyse functional and related non-functional requirements and feasibility of project	2.1 Map business processes using modelling tool including unified modelling language (UML) 2.2 Determine opportunities in business process efficiencies 2.3 Document functional and non-functional processes according to organisational procedures 2.4 Analyse technical and operational feasibility of project 2.5 Determine budget and schedule feasibility of project 2.6 Examine purpose and intent of project within organisation
3. Develop high-level system solutions	3.1 Develop and document feasible solutions according to client requirements 3.2 Explore and document the feasibility of each solution 3.3 Examine alternatives against project constraints 3.4 Document assumptions, dependencies and required resources 3.5 Produce a project risk analysis according to project requirements 3.6 Document future requirements according to organisational procedures
4. Prepare and publish software-requirements documentation	4.1 Develop software-requirements document according to organisational procedures 4.2 Submit software-requirements report to required personnel and obtain project approval

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Selects from, and applies an expanding range of mathematical and problem-solving techniques when determining project budget and schedule feasibility
Oral communication	• Uses listening and questioning techniques to obtain information and requirements using industry language for intended audience

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SKILL	DESCRIPTION
Reading	• Interprets and critically analyses and applies strategies and constructs meaning from complex texts when gathering and analysing information
Writing	• Develops documentation detailing requirements, scope of work and solutions using appropriate structure, layout and technical programming language
Planning and organising	• Sequences and schedules complex activities, monitors implementation and manages communication
Problem solving	• Decides on a course of action using analytical processes • Uses a systematic process and identifies possible solutions to a difficult problem • Uses systematic processes in predictable and unpredictable situations, setting goals and gathering information
Self-management	• Identifies and responds to both explicit and implicit protocols when submitting report to required personnel for approval
Technology	• Accesses, organises, analyses and displays information applicable to software requirements using a range of digital systems and tools

Unit Mapping Information

Supersedes and is not equivalent to ICTPRG419 Analyse software requirements.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG444 Analyse software requirements

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop at least two high-level system solutions for one set of software requirements according to client requirements.

In the course of the above, the candidate must:

- analysing and document at least two functional and at least two non-functional requirements
- document requirements and work performed according to organisational procedures
- submit documents and obtain approval.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- tools and techniques that may be used to analyse software requirements including;
  - client business domain
  - content features including clarity and readability
  - system functionality
  - document design and usability
  - budget creation techniques
  - modelling tools including unified modelling language (UML)
  - documentation techniques
  - risk analysis techniques
  - functions and features, of templates and style guides
  - the role of stakeholders and the degree of stakeholder involvement
  - software development life cycle overview

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- systems development methodologies
- organisational procedures.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- documentation regarding client and software functionality requirements
- sources of information including client business processes
- word processing software and its features
- required hardware and digital devices
- industry standard modelling software.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPRG446 Prepare software development review

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to establish standards applicable to information technology and communications technology (ICT) technical requirements and quality assurance processes applicable to software development.

It applies to those who are in the software development area and are required to confirm the software development process incorporates quality considerations.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Review software and implementation standards	1.1 Obtain and clarify project plan, standards and organisational requirements with required personnel 1.2 Document software standards, according to project standards 1.3 Assign software standards to functions, according to detailed technical plan 1.4 Confirm communication and distribution strategies are clear, coherent and meet overall project plan requirements with required personnel 1.5 Monitor and report on implementation of standards against acceptance criteria and detailed technical specifications

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ELEMENT	PERFORMANCE CRITERIA
2. Review software metrics and milestones	2.1 Define metrics related to project milestones, timeframe and cost considerations 2.2 Develop a schedule of quality reviews 2.3 Determine quality considerations by identifying in-process measurement points applicable to critical organisational requirements 2.4 Determine method to benchmark and scale achievement against stated requirements and cost considerations
3. Document and confirm with require personnel	3.1 Report metrics and milestones to required personnel 3.2 Obtain feedback from required personnel and amend accordingly 3.3 Confirm requirements are met with required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Selects from and applies, an expanding range of mathematical and problem-solving techniques, in the context of metrics and cost considerations
Reading	• Interprets and critically analyses and applies required strategies, to construct meaning from complex texts relating to organisational requirements and project standards
Writing	• Develops documentation detailing software and implementation standards according to project standards using appropriate structure, layout and technical programming language
Planning and organising	• Sequences and schedules complex activities, monitors implementation, and manages communication applicable to quality reviews
Problem solving	• Uses systematic, analytical processes in predictable and unpredictable situations, setting goals and gathering required information
Self-management	• Identifies importance of taking audience, purpose and contextual factors into account when making decisions about what to communicate, with whom, why and how
Technology	• Uses a range of digital systems and tools to access, organise, analyse and display information applicable to own role

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Unit Mapping Information

Supersedes and is equivalent to ICTPRG426 Prepare software development review.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG446 Prepare software development review

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- prepare at least one software development review.

In the course of the above, the candidate must:

- document software and implementation standards according to project standards
- apply and document at least three software metrics and at least three milestones.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard accepted software configuration management processes
- organisational and quality requirements applicable to software development review, including:
  - quality assurance practices and standards
  - quality review techniques and processes
  - benchmarking standards
  - organisational standards and guidelines
- software development life cycle
- acceptance criteria for software development testing
- software metrics development
- the client business domain.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

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This includes access to:

- technical specifications and plans
- organisational standards and guidelines
- project management process, and hierarchy
- organisational business processes
- software and interface requirement specifications
- project budget and timeframe
- required hardware and digital devices.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPRG447 Use extensible markup language

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to create extensible markup language (XML) documents, web-service applications, and client applications to consume web services.

It applies to those who are web developers, web programmers or application programmers, who build Windows or web-based applications that access data in XML format, or who develop and consume web services.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Represent structured data with XML	1.1 Identify task and information requirements and applicable organisational policies and procedures in creating XML document 1.2 Gather information by analysing data, documents, problem domains and discussions with required personnel 1.3 Write XML document and incorporate required structure and syntax according to task requirements 1.4 Validate XML document using validation tools

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ELEMENT	PERFORMANCE CRITERIA
	1.5 Format XML document using styling tools
2. Access and manipulate XML document using XML parser application programming interface (API)	2.1 Create new XML document according to task requirements 2.2 Access and traverse elements and attributes 2.3 Modify and delete elements and attributes according to task requirements 2.4 Transform XML document into a data object 2.5 Transform data object into an XML document
3. Create a service-oriented application using XML	3.1 Define web-services architecture and platform elements 3.2 Develop and deploy web-service applications using a language 3.3 Develop a client application and consume web service using a language

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Selects from, and applies mathematical and problem-solving techniques in a range of contexts • Identifies order and position of elements in a sequence using XML
Oral communication	• Uses listening and questioning techniques to confirm requirements and articulate ideas
Reading	• Interprets, critically analyses and applies required strategies • Constructs meaning when gathering information by analysing data, documents and problem domains
Writing	• Prepares documentation expressing ideas, explores complex issues, and is constructed logically, succinctly and accurately • Writes and edits code and technical data, and confirms correct syntax

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SKILL	DESCRIPTION
	and accuracy
Planning and organising	• Uses systematic, analytical processes in predictable and unpredictable situations, setting goals and gathering required information
Problem solving	• Applies formal problem-solving processes when tackling unfamiliar problems • Breaks complex issues into manageable parts and identifies and evaluates several options for action
Technology	• Utilises broad range of features within applications and improves personal productivity and optimises software functions

Unit Mapping Information

Supersedes and is equivalent to ICTPRG427 Use XML effectively.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG447 Use extensible markup language

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- produce at least two well-formed, formatted and validated XML documents
- use an XML parser to access, modify and transform XML documentation
- create at least one service-oriented application using XML.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- tree structure of data to be represented
- web services architecture and platform elements
- programming concepts and languages including structure and syntax
- validation and styling tools within XML
- XML document elements including:
  - root element
  - child element
  - sub-child element
- syntax rules relating to:
  - case sensitivity
  - closing tag
  - entity reference
  - proper nesting
  - quoted attribute values
  - single-root element
- the main features and services of the internet
- data modelling techniques and procedures

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- commonly used elements in hypertext markup language (HTML)
- information system features
- XML parser application programming interface (API) and functions
- source characteristics.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- required hardware and its components
- extensive markup language (XML) and JavaScript object notation (JSON) tools and software
- tools to access and develop a data source including:
- a text editor
- a web browser
- client and functionality requirements and documentation
- a web server and software that hosts services to deploy and test the web-service application
- required libraries.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPRG509 Build using rapid application development

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to build using rapid application development (RAD) tools.

It applies to individuals who may work as programmers and who are required to develop new systems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Construct an application using RAD	1.1 Capture and record business rules, using a methodology well-suited for the chosen RAD and RAD techniques 1.2 Design an application with a focus on modularity and future extension 1.3 Develop the code by other RAD tools 1.4 Build and demonstrate the completed transaction to the user, for revision within the agreed terms of reference

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ELEMENT	PERFORMANCE CRITERIA
	1.5 Take action to ensure that the design caters for continuous change, by involving the user in the iteration process 1.6 Provide quality assurance (QA) testing throughout the phase and provide feedback to the appropriate person 1.7 Use code optimisers and performance tools
2. Prepare the handover stage	2.1 Track the implemented modules, and follow up where necessary with the appropriate person 2.2 Review user and builds for each module in the deliverables as preparation for handover 2.3 Compare the specification and implementation schedules for each module, and confirm the functional requirements, according to the specifications 2.4 Document the completed work

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 2.2, 2.3	• Interprets and analyses complex technical documents
Writing	1.1, 1.2, 1.3, 2.4	• Documents technical processes and completes workplace documents, in a style and form appropriate to the audience
Interacts with others	1.4, 1.5, 1.6, 2.1	• Liaises with users, and manages changes in design, by collaborating with different stakeholders in the development process
Get the work done	1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 2.1, 2.3	• Identifies technical, or conceptual issues, and applies analytical processes in order to resolve issues • Uses a range of digital tools and sophisticated techniques, to meet the desired outcomes • Takes responsibility for planning, sequencing and prioritising tasks, to achieve the required outcomes • Uses analytical and lateral thinking to review practices and to suggest improvements

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTPRG509 Build using rapid application development	ICAPRG509A Build using rapid application development	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG509 Build using rapid application development

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- design an application and develop high quality code, according to client specifications
- provide quality assurance testing and monitoring
- effectively demonstrate use of code optimisers using rapid application development (RAD) techniques
- accurately document completed work.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline industry-accepted prototyping tools
- describe quality assurance practices as they relate to RAD
- describe the impact that the client business domain will have on RAD in particular there effect on:
  - cost
  - quality
- outline the role of the stakeholder, and the involvement required in RAD
- describe three or more current industry development methodologies
- identify and apply three or more programming languages
- identify and apply the most appropriate RAD tool, taking into consideration the targeted platform or multi-platform options.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the programming and software development industry, and include access to:

- the computer-aided software engineering tools (CASE) repository, to facilitate the re-use of templates and components
- CASE tools
- a code generator
- detailed user requirements
- prototyping software
- the requirements document, including the model and scope
- the appropriate learning and assessment support, when required.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPRG530 Manage projects using software management tools

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to use software management tools, to manage a systems development project from initiation to completion.

It applies to software developers, who work in a team or who individually develop systems to specification using software management tools to manage delivery within time and budget parameters.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Select software management tools	1.1 Determine required software development methodology according to system development project requirements 1.2 Determine required project management software according to project requirements 1.3 Determine source-control system required to manage code and handle source-control system conflict 1.4 Determine and document required collaboration software according to organisational policies and procedures
2. Use software management tools	2.1 Determine and document project plan according to software specifications and project requirements 2.2 Define required source-control procedures according to

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ELEMENT	PERFORMANCE CRITERIA
	software specifications and project requirements 2.3 Create collaborative environment according to software specifications and project requirements
3. Monitor use of software management tools	3.1 Monitor and maintain project plan and document progress according to organisational policies and procedures 3.2 Check accurate code entry according to source-control system 3.3 Monitor collaboration environment and resolve identified issues according to organisational policies and procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Numeracy	• Selects from, and applies, an expanding range of mathematical and problem-solving strategies
Reading	• Interprets and critically analyses, and applies, the required strategies to construct meaning from complex texts
Writing	• Displays a knowledge of structure and layout, employing a broad vocabulary, grammatical structure, and the conventions required to text
Teamwork	• Actively identifies the requirements of important communication exchanges, selecting required channels, format, tone and content to suit the purpose and audience, and monitoring the impact when creating and resolving issues • Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective group interaction, influencing direction and, on occasion, taking a leadership role
Planning and organising	• Sequences and schedules complex activities, monitors implementation and manages relevant communication, in a collaborative project environment • Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information and identifying, and evaluating, options against the agreed criteria
Problem solving	• Uses analytical processes to decide on a course of action, establishing the criteria for deciding between options and seeking input, and advice from others, before taking action when necessary
Technology	• Uses a range of digitally based technology and applications to access and filter data, extract, organise, integrate, and share relevant information, in

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SKILL	DESCRIPTION
	increasingly effective ways

Unit Mapping Information

Supersedes and is equivalent to ICTPRG502 Manage a project using software management tools.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG530 Manage projects using software management tools

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- research and select at least one software management tool to manage a system development project.

In the course of the above, the candidate must:

- create, monitor and adjust a project plan, according to the required specifications
- define source-control procedures, and check that the correct entries are input into the system
- create, monitor, and resolve issues in a collaborative environment.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- basic principles of project management
- key features of the software development life cycle (SDLC)
- importance of software specifications when applied managing projects using software management tools
- methods and tools used for version control.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- the internet
- source-control software

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- industry standard tools and licences that may be used for managing projects using software management tools.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPRG533 Debug and monitor applications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to debug and monitor a software application.

It applies to software developers, testers and support engineers who use logging and tracing techniques to identify software problems and monitor systems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Implement logging and error handling framework	1.1 Determine logging framework for writing text messages and prioritise log files for sending data to monitoring applications 1.2 Create custom event log for the application according to logging framework 1.3 Test logs and check required state of running application according to logging and error handling framework
2. Debug and trace application	2.1 Apply basic debugging techniques according to error handling framework 2.2 Identify required tools and debug software applications 2.3 Write required code for debugging as required according to error handling framework

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ELEMENT	PERFORMANCE CRITERIA
3. Monitor the application's performance	3.1 Identify and use profiling tools and verify parts of system that consume the most resources 3.2 Analyse and document performance issues and apply application performance improving changes

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Numeracy	• Selects from, and applies, an expanding range of mathematical and problem-solving strategies when analysing logs, and monitoring applications data
Reading	• Interprets and critically analyses complex texts, and applies the required strategies to construct meaning from complex texts
Writing	• Writes and edits code and technical data in a logical manner using required syntax
Planning and organising	• Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information, and identifying, and evaluating options against the agreed criteria
Problem solving	• Uses analytical processes to decide on a course of action, establishing the criteria for deciding between options • Uses a systematic process to identify possible solutions to a difficult problem
Technology	• Understands the key principles and concepts underpinning the design, and operation, of digital systems and tools

Unit Mapping Information

Supersedes and is equivalent to ICTPRG503 Debug and monitor applications.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG533 Debug and monitor applications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- implement changes to improve an application's performance on at least one application.

In the course of the above, the candidate must:

- collect application performance data
- identify and analyse performance issues
- use a logging framework to create an event log for an application
- use tools and techniques to trace and debug an application.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard logging frameworks, including:
  - logging
  - tracing tools and their functions
  - profiling tools and their functions
- basic principles of:
  - database-management systems
  - object-oriented programming
  - open-source development tools
  - software development life cycle (SDLC)
- procedures for developing, debugging and monitoring small-size applications.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- performance monitoring tools on client and server system
- specific debugging tools and licenses
- integrated development environment (IDE)
- end user device.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPRG534 Deploy applications to production environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the, skills and knowledge required to install, uninstall, and configure an application to a production environment.

It applies to those responsible for the software deployments of enterprise applications. They may work as application DevOps engineers, developers, administrators, release managers or deployment coordinators.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan software installation	1.1 Determine client system and server system according to installation requirements 1.2 Determine installation method according to installation requirements 1.3 Determine organisational security requirements 1.4 Determine and document software-installation plan according to organisational policies and procedures
2. Perform software installation	2.1 Create an install package for application according to installation plan 2.2 Test install package in test environment 2.3 Deploy install package to production environment

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ELEMENT	PERFORMANCE CRITERIA
3. Plan and test application removal	3.1 Create uninstall package according to production environment 3.2 Test uninstall package in test environment according to production environment 3.3 Deploy uninstall package to production environment
4. Perform database installation	4.1 Deploy database from development environment to production environment 4.2 Specify connection string to database according to production environment 4.3 Test database installation according to production environment
5. Manage application configuration	5.1 Configure application to required parameters for the production environment 5.2 Modify deployment variables and use configuration files 5.3 Configure security features application to required parameters for the production environment

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Reading	• Interprets, and critically analyses, complex texts and applies the required strategies to construct meaning from complex texts
Writing	• Writes and edits code and technical data in a logical manner using required syntax
Planning and organising	• Sequences and schedules complex activities, monitors implementation, and manages relevant communication
Problem solving	• Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information, and identifying, and evaluating options against the agreed criteria • Uses analytical processes to decide on a course of action, establishing the criteria for deciding between options
Self-management	• Identifies and complies with organisational requirements relevant to deployment of applications
Technology	• Understands the key principles and concepts underpinning the design, and operation, of digital systems and tools

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Unit Mapping Information

Supersedes and is equivalent to ICTPRG504 Deploy an application to a production environment.

Links

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Assessment Requirements for ICTPRG534 Deploy applications to production environments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- deploy at least one application to a production environment.

In the course of the above, the candidate must:

- configure variables, parameters and security features for a production environment
- prepare plans for software installation, including account data, resource and security requirements
- install and uninstall packages
- test and troubleshoot issues.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- principles of database management systems applicable to deploying applications to production environments
- software development life cycle (SDLC) that may be used in deploying applications to production environments
- programming language used to create deployment applications
- Information and Communications Technology (ICT) hardware, software, security protocols and standards and organisational policies relevant to deployment of applications.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

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- packages on client and server system
- database management system software
- required tools and licences
- integrated development environment (IDE).
- end user device.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPRG535 Build advanced user interfaces

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to design, build and test an advanced user interface (UI), including interaction techniques, rich controls, improved client-side validation, customisation and personalisation, graphics and multimedia.

It applies to individuals who work as user-interface designers and software developers and are responsible for managing and implementing complex UI design.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan UI design	1.1 Determine client technology, development tools, and platforms according to UI solution 1.2 Review conceptual design with required personnel and seek and respond to feedback 1.3 Design and document UI layout and structure according to UI requirements
2. Implement interaction techniques	2.1 Apply interaction design patterns according to UI design plan 2.2 Implement client-side validation according to UI requirements 2.3 Demonstrate alignment of implement interactions against UI design plan

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ELEMENT	PERFORMANCE CRITERIA
3. Build customisable and personalised UI	3.1 Build customisable UI and allow users to select their own customised version of the underlying application 3.2 Build personalised UI according to UI design plan task requirements 3.3 Demonstrate alignment of personalised UI to UI design plan 3.4 Implement required updates and confirm improvement to user experience
4. Implement graphics and multimedia	4.1 Create and display the graphics according to UI requirements 4.2 Add required multimedia content to the application 4.3 Demonstrate alignment of implementing graphics against UI design plan

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Numeracy	• Selects from, and applies, an expanding range of mathematical and problem-solving strategies in a range of contexts, when designing layout and structure
Reading	• Interprets, and critically analyses, complex texts and applies the required strategies to construct meaning from complex texts, when reading and interpreting technical information, and determining suitable technology and tools
Writing	• Prepares documentation, expressing ideas and exploring complex issues using relevant industry language • Writes and edits computer code, and technical data using correct syntax and logical flow
Planning and organising	• Uses nuanced knowledge of context to demonstrate knowledge of anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise
Problem solving	• Understands the key principles and concepts underpinning the design, and operation, of digital systems and tools, and applies these when troubleshooting existing technology
Technology	• Seeks to understand the potential of new technology, in the context of implementing interaction, and customisable features, and graphics and multimedia, into the UI

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Unit Mapping Information

Supersedes and is equivalent to ICTPRG505 Build advanced user interface.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG535 Build advanced user interfaces

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design and build an advance UI design.

In the course of the above the candidate must:

- determine an organisation's technology, development tools, and UI platform
- apply advanced techniques in order to create a complex user interface (UI).

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- concepts of programming that may be used to build advanced user interfaces, including:
  - client-side programming
  - object-oriented programming
  - web design programming in hypertext markup language (HTML), cascading style sheet (CSS), and JavaScript
- UI prototyping techniques and purpose.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- integrated development environment (IDE)
- the client system, and the server system
- multimedia tools

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- a solution to apply UI design
- required interface and hardware device
- required tools, software and licences required for UI implementation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPRG536 Design application architecture

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to design the structure of software or systems components, and how they interact.

It applies to those who work as software architects, developers, designers, software engineers or programmers, and responsible for designing, and building, solution architecture.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Gather and confirm architecture requirements	1.1 Gather broad architectural requirements from required personnel 1.2 Establish and document architectural requirements
2. Design layered architecture	2.1 Separate areas of concern into logical layers according to architectural requirements 2.2 Determine cross-cutting concerns according to architectural requirements 2.3 Define system into components according to architectural requirements 2.4 Identify responsibilities of each component 2.5 Identify required interconnections between components

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ELEMENT	PERFORMANCE CRITERIA
3. Plan a strategy to re-use components	3.1 Determine and document a strategy for communicating with external systems according to organisational policies and procedures 3.2 Interact with existing legacy components according to strategy
4. Design for globalisation and localisation	4.1 Determine and document culture specific information according to organisational requirements 4.2 Determine and document database design features according to architectural requirements 4.3 Select and document required user interface according to organisational requirements 4.4 Develop software product for specific country and worldwide distribution

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Oral communication	• Articulates requirements and responsibilities distinctively, using effective communication techniques and industry standard technical language intended for audience and environment
Reading	• Interprets complex technical, and non-technical, information from a range of sources
Writing	• Prepares technical workplace documents detailing processes and outcomes that fulfil the expectations of different stakeholders
Teamwork	• Identifies, and explores, the differences between a diverse range of people and cultures in a programming context
Planning and organising	• Takes responsibility for planning, sequencing, and prioritising tasks in order to achieve the required outcomes
Problem solving	• Uses a range of digital tools and sophisticated techniques, to meet the desired outcomes • Identifies technical or conceptual issues, and applies analytical processes to resolve these issues • Uses analytical and lateral thinking to review current practices, and to develop new or improved software or systems

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Unit Mapping Information

Supersedes and is equivalent to ICTPRG506 Design application architecture.

Links

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Assessment Requirements for ICTPRG536 Design application architecture

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design application architecture with at least five layered applications
- configure applications and adapt to at least two different locations.

In the course of the above, the candidate must:

- adapt a software product to a target market
- document processes and outcomes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- principles of database design that may apply to designing application architecture
- industry standard software development methodologies
- object-oriented programming and its role in application architecture
- software development life cycle relevant to designing application architecture.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- both functional and non-functional requirements
- tools to design software architecture
- specific information for target market and audience.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPRG537 Implement security for applications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to implement security for software applications, including code access security, security access control, cryptographic and secure, input and output handling.

It applies to individuals who work as software developers, software engineers, system and security administrators and testers, and responsible for coding secure software applications.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Implement policy-based code-access security	1.1 Identify purpose of application security in software development 1.2 Configure required platform security configuration files using security configuration tools 1.3 Define required restriction custom code access permission and restrict access to protected resources 1.4 Define required access restriction custom code access and run protected operations
2. Implement security access control	2.1 Plan and document authentication and authorisation strategy according to organisational policies and procedures 2.2 Develop and document required application authentication

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ELEMENT	PERFORMANCE CRITERIA
	and authorisation strategy
3. Write encrypt and decrypt code data	3.1 Determine and document required standard cryptographic algorithms 3.2 Encrypt, and decrypt, data using standard cryptographic algorithms
4. Protect application against injections	4.1 Plan and document secure input and output handling and prevent vulnerabilities related to code injections 4.2 Use secure input and output handling according to task requirements

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Oral communication	• Articulates requirements and responsibilities distinctively, using effective communication techniques and industry standard technical language intended for audience and environment
Reading	• Evaluates complex and varied information, and concepts, in software security
Writing	• Prepares technical workplace documents detailing processes and outcomes that fulfil the expectations of different stakeholders • Writes and edits computer code, and technical data using correct syntax and logical flow
Planning and organising	• Takes responsibility for planning, sequencing and prioritising processes and tasks to achieve the required outcomes • Uses a range of digital tools and sophisticated techniques to meet desired outcomes • Is acutely aware of the importance of data security and of monitoring, and controlling, access to digitally stored and transmitted information
Problem solving	• Uses nuanced knowledge of context to demonstrate knowledge of anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise • Applies systematic and analytical problem-solving processes, in order to develop required security access control strategies
Technology	• Demonstrates knowledge of principles, concepts, language and practices associated with the digital world

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Unit Mapping Information

Supersedes and is equivalent to ICTPRG507 Implement security for applications.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG537 Implement security for applications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- secure at least two different applications.

In the course of the above, the candidate must:

- plan a security strategy
- prevent security attacks
- document processes and outcomes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard hardware and networking relating to implementing security for applications
- industry standard programming algorithms and object-oriented programming used to implement applications security
- mathematics required for programming algorithms.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- security configuration tools required to implement security for applications
- required software development environment
- testing and debugging tools applicable to implementing security for applications

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- network resources required to implement security for applications.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTPRG538 Create mashups

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to combine content from more than one source into new integrated applications and create custom mashups.

It applies to those responsible for software developers who develop web applications using the enabling technologies to create mashup applications.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to create mashups	1.1 Identify mashup content according to organisational requirements 1.2 Determine sources of content required for mashup 1.3 Determine and document mashup interface requirements 1.4 Submit documentation to required personnel and seek and respond to feedback
2. Remix elements from multiple websites to create new mashups	2.1 Analyse Web 2.0 concept and web as a platform according to mashup requirements 2.2 Evaluate and select APIs according to mashup requirements 2.3 Determine programming language according to

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ELEMENT	PERFORMANCE CRITERIA
	APIs requirements 2.4 Create mashups of several services according to task requirements
3. Use mashup tools	3.1 Evaluate and select required tools according to task requirements 3.2 Create mashups according to task requirements 3.3 Align created mashups to organisational requirements 3.4 Obtain finalised task sign off from required personnel

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Oral communication	• Articulates requirements and responsibilities distinctively, using effective communication techniques and industry standard technical language intended for audience and environment
Reading	• Critically analyses documentation from a variety of sources and records, and consolidates the information to determine requirements
Writing	• Writes and edits computer code, and technical data using correct syntax and logical flow
Planning and organising	• Operates from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation, and identifying and addressing issues
Problem solving	• Systematically gathers and analyses all relevant information and evaluates options, in order to make decisions about APIs • Identifies technical or conceptual issues, and applies analytical processes, to resolve issues • Uses a range of digital tools and sophisticated techniques, to meet the desired outcomes
Self-management	• Uses systematic processes, setting goals, gathering required information and identifying and evaluating options against agreed criteria
Technology	• Demonstrates sophisticated knowledge of principles, concepts, language and practices associated with the digital world

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Unit Mapping Information

Supersedes and is equivalent to ICTPRG508 Create mashups.

Links

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Assessment Requirements for ICTPRG538 Create mashups

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- create at least two mashups.

In the course of the above, the candidate must:

- document requirements and process.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- hypertext markup language (HTML), cascading style sheet (CSS) and JavaScript applicable to creating mashups
- server-side scripting language required to create mashups
- outline extensible markup language (XML), web services, Asynchronous JavaScript (AJAX), and metadata
- web design and development and how it applies to creating mashups.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- the internet
- required mashup tools and API providers
- required Web 2.0 tools
- an integrated development environment (IDE)
- organisational deliverables and technical expectations for mashup creation.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPRG540 Maintain custom software

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to maintain software to client user requirements.

It applies to individuals who may work as software developers who are required to maintain existing software.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine software fault	1.1 Determine details of software faults 1.2 Identify and document technical data required to troubleshoot determined fault 1.3 Submit documentation to required personnel and seek and respond to feedback
2. Identify and isolate fault	2.1 Review program documentation and identify specific modules according to task requirements 2.2 Review the source code and identify logic errors according to technical data 2.3 Read manuals, help files and ‘read me files,’ and determine if there is a known fix 2.4 Conduct required testing and identify and document fault

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ELEMENT	PERFORMANCE CRITERIA
	2.5 Escalate faults that cannot be identified to required personnel according to organisational procedures
3. Design fix for fault	3.1 Determine and document faults and initial fix suggestions according to organisational requirements 3.2 Determine and document alternative options and choose required solution 3.3 Determine and document impact of fix on other parts of system 3.4 Document required changes according to organisational guideline 3.5 Submit documents to required personnel and seek and respond to feedback
4. Implement fix to software	4.1 Identify and obtain access to required software development tools, source code, and libraries 4.2 Construct required fault correction code according to organisational and programming standards 4.3 Compile code for changed programs and associated modules 4.4 Correct, and resubmit required code until error free 4.5 Document changes according to organisational and programming standards
5. Test fix and associated system areas	5.1 Check logic and determine it works with test data, corrects original fault, and does not cause problems elsewhere 5.2 Request users to perform acceptance testing and document outcomes 5.3 Submit documentation to required personnel and seek and respond to feedback 5.4 Confirm acceptance by systems operations and arrange for sign-off, according to procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Oral communication	• Uses listening and questioning techniques to confirm requirements and articulate complex concepts
Reading	• Analyses and interprets complex technical documents for specific information

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SKILL	DESCRIPTION
Writing	• Prepares technical workplace documents detailing processes and outcomes that fulfil the expectations of different stakeholders
Teamwork	• Liaises with various stakeholders and negotiates mutually agreeable outcomes
Planning and organising	• Takes responsibility for planning, sequencing and prioritising tasks to achieve deadlines
Problem solving	• Identifies technical or conceptual issues, and applies analytical processes to resolve issues • Uses a range of digital tools and sophisticated techniques to meet the desired outcomes
Self-management	• Takes personal responsibility for following explicit and implicit policies, procedures and standards
Technology	• Demonstrates sophisticated knowledge of principles, concepts, language and practices associated with the digital world

Unit Mapping Information

Supersedes and is equivalent to ICTPRG510 Maintain custom software.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG540 Maintain custom software

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- maintain and fix at least one custom software application.

In the course of the above, the candidate must:

- deploy range of solutions to replicate results
- document processes and outcomes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- concepts relating to analysing a system performance compared with the system's current functionality
- processes and procedures relating to testing software systems
- industry standard hardware and software products, as they relate to system maintenance
- programming code required for the project
- program documentation required for maintaining custom software
- impact of changes on applications and systems relating to maintaining custom software
- programming standards relating to custom software.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- required fault logs and help-desk reports

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- software development tools, documentation and environment required for maintaining custom software
- source code and libraries required to maintain custom software.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPRG541 Monitor and support data conversion to new ICT systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to monitor and support data conversion to a new Information and Communications Technology (ICT) system.

It applies to software developers who are required to convert data on new ICT systems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to monitor data conversion	1.1 Determine organisational monitoring and support requirements 1.2 Obtain and analyse conversion supporting documentation from required personnel 1.3 Determine and document monitoring and support conversion plan according to organisational requirements 1.4 Determine software, hardware and environmental prerequisites in conversion plan
2. Monitor data conversion	2.1 Backup production data according to conversion plan 2.2 Validate data accuracy and integrity according to conversion specifications

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ELEMENT	PERFORMANCE CRITERIA
	2.3 Identify data rejected by conversion tools, and conduct conversion plan actions 2.4 Document data rejection and errant behaviour of conversion process according to organisational requirements
3. Support conversion	3.1 Demonstrate, document and verify conversion results against conversion plan 3.2 Submit documentation to required personnel, seek and respond to feedback 3.3 Document backup copies of conversion files according to organisational requirements

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Oral communication	• Articulates requirements and responsibilities distinctively, using effective communication techniques and industry standard technical language intended for audience and environment
Reading	• Interprets, and critically analyses, complex texts and applies the required strategies in order to construct meaning from the supporting documentation for conversion, and when identifying prerequisites in the plan
Writing	• Prepares technical workplace documents detailing processes and outcomes that fulfil the expectations of different stakeholders
Teamwork	• Selects, implements and seeks to improve protocols governing communications with clients and co-workers in a range of work contexts • Collaborates with others, sharing information to build strong work groups
Planning and organising	• Sequences and schedules complex activities, monitors implementation, and manages relevant communication when taking action to confirm backup before conversion
Problem solving	• Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information, and identifying, and evaluating options against the agreed criteria when validating data accuracy and integrity, and when verifying results • Demonstrates knowledge of an increasing range of familiar problems, their symptoms and causes, actively looking for early warning signs,

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SKILL	DESCRIPTION
	and implementing contingency plans in relation to the data rejected by conversion tools
Technology	• Demonstrates sophisticated knowledge of the principles, concepts, language and practices associated with the digital world, and uses these to troubleshoot, and understand, the uses and potential of new technology, when monitoring and supporting data conversion to a new ICT system

Unit Mapping Information

Supersedes and is equivalent to ICTPRG511 Monitor and support data conversion to new ICT system.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG541 Monitor and support data conversion to new ICT systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- implement, backup and maintain an organisation’s data conversion on at least one occasion.

In the course of the above, the candidate must:

- document processes and outcomes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard data modelling methodologies required to monitor and support data conversion
- industry standard data conversion tools
- industry standard hardware and software products applicable to monitoring and supporting data conversion
- data conversion from legacy systems.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- documentation guidelines
- sample data to be converted
- data conversion tools.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPRG542 Review developed software

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to review developed software and quality standards. This involves reviewing quality standards, determining development quality issues and reviewing specific quality areas.

It applies to senior software developers who check the quality of software produced by other programmers.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Review quality standard requirements	1.1 Obtain and review organisation's quality standards and software development requirements 1.2 Determine and document quality review and validation processes
2. Determine and address development quality issues	2.1 Determine and document significant impact that processes could have on quality of product under development 2.2 Conduct consultation with required personnel and determine required actions 2.3 Plan and document resource allocation across required personnel

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ELEMENT	PERFORMANCE CRITERIA
3. Review quality areas	3.1 Review development and validation processes and confirm alignment with defect-free software 3.2 Examine documentation and methods for development and align supportable software requirements 3.3 Determine and document recommendations to improve defect-free software and supportable software

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Oral communication	• Articulates requirements and responsibilities distinctively, using effective communication techniques and industry standard technical language intended for audience and environment
Reading	• Interprets, and critically analyses, complex texts and applies required strategies, to construct meaning from the organisation's quality standards and the standards related to software development
Writing	• Prepares technical workplace documents detailing quality standards and procedures that fulfil the expectations of different stakeholders
Teamwork	• Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective group interaction, influencing direction, and taking a leadership role on occasion
Planning and organising	• Operates from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation, and identifying and addressing issues
Problem solving	• Uses active listening, observational and questioning techniques in order to identify different perspectives, and confirm, clarify or revise knowledge • Sequences and schedules complex activities, monitors implementation, and manages relevant communication • Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information, and identifying, and evaluating options against the agreed criteria • Uses analytical processes to decide on a course of action, establishing the criteria for deciding between options, and seeking input and advice from others and taking necessary action
Self-management	• Responds to both, explicit and implicit, protocols within familiar work contexts and demonstrates knowledge of the importance of

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SKILL	DESCRIPTION
	identifying, and responding to, protocols in new situations, in the context of gaining agreement on procedures
Technology	• Demonstrates sophisticated knowledge of principles, concepts, language and practices associated with the digital world

Unit Mapping Information

Supersedes and is equivalent ICTPRG515 Review developed software.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG542 Review developed software

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- review existing developed software and organisation's quality standards relevant to software development on at least one occasion.

In the course of the above, the candidate must:

- determine quality issues against quality standards and procedures that support development of defect-free products to meet client requirements
- provide feedback on the software.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard hardware and software products and quality standards that relate to reviewing developed software
- input and output drivers and operating systems used in the reviewing developed software
- procedural and object-oriented languages that relate to the reviewing and developing software
- real-time programming techniques
- testing strategies and processes
- software application measuring and estimating methodologies
- software development and configuration management processes
- software metrics development relevant to reviewing developed software.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- data dictionaries
- design specifications
- a data stream management system (DSMS)
- a simulated scenario
- Australian and international software quality standards.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPRG543 Develop integration blueprint for ICT systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to document and maintain details of technology, and architectural components, incorporated into the integration blueprint for an Information and Communications Technology (ICT) system.

It applies to individuals in senior development roles, required to integrate a series of components.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Review technical architecture documents	1.1 Review technical architecture documents against organisational requirements 1.2 Identify, evaluate and document technical considerations for alignment for technical best fit. 1.3 Update integration blueprint according to technical specifications and organisational requirements
2. Undertake compatibility tests	2.1 Assemble components and component technologies according to design specifications 2.2 Test components and confirm functionality against design specifications 2.3 Identify non-compliance issues against technical

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ELEMENT	PERFORMANCE CRITERIA
	specifications 2.4 Update integration blueprint with compatibility testing outcomes
3. Assess risk areas	3.1 Identify and document scope of modifications required from the compatibility test 3.2 Determine and document required modifications with suppliers according to compatibility test outcomes 3.3 Record modifications to risk area in integration blueprint
4. Assess readiness for stress testing	4.1 Stabilise platform according to technical requirements 4.2 Evaluate platform compliance with technical requirements 4.3 Update and document integration blueprint for stress testing

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Reading	• Interprets, and critically analyses, complex texts and applies required strategies, to construct meaning from complex texts when reviewing technical architecture documents
Writing	• Prepares complex workplace documentation detailing processes and outcomes using required structure, layout and technical programming language
Teamwork	• Participates in complex formal and informal conversations relevant to own role, initiating and taking the lead where required, in relation to negotiating with suppliers
Planning and organising	• Uses a combination of formal, logical planning processes, and an increasingly intuitive knowledge of context to identify relevant information and risks, and identify, and evaluate, alternative strategies and resources • Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information, and identifying and evaluating options against agreed criteria • Uses analytical processes to decide on a course of action, establishing the criteria for deciding between options
Problem solving	• Uses nuanced knowledge of context to demonstrate knowledge of anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise

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SKILL	DESCRIPTION
Self-management	• Uses systematic processes, setting goals, gathering required information and identifying and evaluating options against agreed criteria
Technology	• Demonstrates a sophisticated knowledge of principles, concepts, language and practices associated with the digital world

Unit Mapping Information

Supersedes and is equivalent to ICTPRG516 Develop integration blueprint for ICT systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG543 Develop integration blueprint for ICT systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- review and develop technical architecture documentation and update integration blueprint on at least two occasions.

In the course of the above, the candidate must:

- undertake component compatibility testing
- assess and minimise risk of modifications
- stabilise platform, assess compliance with the technical requirements.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard technology suppliers and components relating to developing integration blueprints
- industry development and design methodologies relevant to developing integration blueprints
- industry standard hardware and software products, features, and capabilities required for developing integration blueprints
- industry standard testing procedures for developing integration blueprints
- stress load testing principles relevant to developing integration blueprints.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

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- design specifications
- a high-level, diagrammatic view of the main system components.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPRG544 Install, test and evaluate pilot version of ICT systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to install a pilot version of a developed Information and Communications Technology (ICT) system, test it with a small group of users, and evaluate it against required criteria.

It applies to those who are working in ICT development and deployment roles and required to test and evaluate new systems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for pilot system	1.1 Determine objectives, success and acceptance criteria, and implementation for pilot system according to organisational requirement 1.2 Identify and secure technical and organisational resources required for pilot implementation 1.3 Determine executive support for the pilot 1.4 Develop project plan according to organisational policies and procedures 1.5 Submit project plan to required personnel and seek and respond to feedback
2. Install pilot system	2.1 Install and configure pilot according to project plan

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Verify technical readiness of the pilot against success and acceptance criteria 2.3 Test data accuracy and document outcomes in status report 2.4 Submit document to required personnel and seek and respond to feedback.
3. Test pilot system	3.1 Determine required pilot group release according to project plan 3.2 Determine and document test objectives 3.3 Determine and document new system training brief 3.4 Run the test and document outcomes 3.5 Seek and document test feedback from required personnel
4. Evaluate feedback results	4.1 Identify discrepancies between pilot system test results and pilot system requirements 4.2 Determine and document troubleshooting for discrepancies 4.3 Update and submit documentation to required personnel and obtain finalised task sign off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Numeracy	• Selects from, and applies, an expanding range of mathematical and problem-solving strategies in a range of contexts
Oral communication	• Articulates ideas and requirements, using effective communication techniques and industry standard technical language intended for audience and environment
Reading	• Interprets, and critically analyses, complex texts and applies required strategies, to construct meaning from complex texts
Writing	• Prepares complex workplace documentation detailing processes and outcomes using required structure, layout and technical programming language
Planning and organising	• Sequences and schedules complex activities, monitors implementation, and manages relevant communication • Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information, and identifying, and evaluating, options against the agreed criteria • Uses analytical processes to decide on a course of action, establishing the criteria for deciding between options, and seeking input and advice

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SKILL	DESCRIPTION
	from others, before taking action when necessary
Problem solving	• Uses nuanced knowledge of context to demonstrate knowledge of anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise
Technology	• Understands the key principles and concepts, underpinning the design and operation of digital systems and tools

Unit Mapping Information

Supersedes and is equivalent to ICTPRG517 Install, test and evaluate pilot version of ICT system.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG544 Install, test and evaluate pilot version of ICT systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- install, test and evaluate a pilot system on at least one occasion.

In the course of the above, the candidate must:

- establish objectives, acceptance criteria and resource requirements
- document project plan, processes and outcomes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- role of stakeholders and degree of stakeholder involvement in the development of a pilot system
- industry standard information-gathering methodologies applicable to installing, testing and evaluating pilot systems
- industry system development and design methodologies applicable to pilot systems
- industry standard hardware and software products applicable to pilot systems
- features and capabilities of current industry-accepted system piloting methodologies
- quality assurance practices relating to installing, testing and evaluating a system.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- pilot system

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- technical materials.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTPRG545 Monitor system pilots

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to monitor implementation of a system pilot, and to evaluate its performance through testing and review.

It applies to senior software developers, systems analysts or those in infrastructure operation roles, who implement systems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1.Prepare to monitor pilot system implementation	1.1 Determine pilot system implementation requirements 1.2 Identify existing pilot and system procedures 1.3 Obtain and determine completeness and relevance of pilot support documentation 1.4 Determine and document required pilot system updates according to organisational requirements 1.5 Submit documentation to required personnel and seek and respond to feedback
2. Monitor implementation of pilot system	2.1 Supervise system functionality and integrity tests according to pilot system implementation plan 2.2 Document system functionality and integrity test findings 2.3 Determine and document technical support requirements

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ELEMENT	PERFORMANCE CRITERIA
	according to organisational policies and procedures 2.4 Provide required technical support
3. Evaluate the pilot system	3.1 Review pilot operation against required pilot objectives, and success criteria and document outcomes 3.2 Prioritise implement and assess impact of required upgrades and modifications 3.3 Document the review process and submit to required personnel

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Oral communication	• Articulates ideas and requirements, using effective communication techniques and industry standard technical language intended for audience and environment
Reading	• Interprets and critically analyses complex texts
Writing	• Prepares complex workplace documentation detailing review process and outcomes using required structure, layout and technical programming language
Planning and organising	• Sequences and schedules complex activities, monitors implementation, and manages relevant communication • Reflects on outcomes and feedback from others in order to identify general principles and concepts that may be applicable in new situations • Uses analytical processes to decide on a course of action, establishing the criteria for deciding between options, seeking input and advice from others and taking necessary action
Problem solving	• Takes responsibility for decisions about when, and how, to complete tasks and coordinate with others
Self-management	• Identifies and follows relevant organisational policies and procedures
Technology	• Understands the key principles and concepts, underpinning the design and operation of digital systems and tools

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Unit Mapping Information

Supersedes and is equivalent ICTPRG518 Monitor the system pilot.

Links

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Assessment Requirements for ICTPRG545 Monitor system pilots

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify at least one systems pilot objective
- monitor the implementation and evaluate systems of at least one large pilot system.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard system of piloting methodologies including their general features, capabilities and acceptance criteria
- industry standard system development and design methodologies applicable to monitoring systems pilots
- industry information-gathering methodologies
- function and features of a system, including:
  - system integration
  - system response and recovery times
  - user interfaces
  - validation of inputs and outputs.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- pilot plan
- acceptance criteria
- system to be piloted.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTPRG546 Validate application designs against specifications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to check software application designs against specifications and to apply validation techniques across the system's life cycle.

It applies to who work in the area of software development, including software project managers, testers, software engineers, system analysts and software developers, and are responsible for verifying and validating software design specifications.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Evaluate software requirement specifications	1.1 Identify existing software specifications from organisational documents 1.2 Evaluate existing software against requirements and determine and document alignment 1.3 Validate software requirement specifications document with required personnel
2. Create proof of concept prototype	2.1 Create prototype system using rapid application development tools (RAD) according to specifications 2.2 Present and demonstrate prototype system to required personnel 2.3 Seek and respond to presentation feedback from required

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ELEMENT	PERFORMANCE CRITERIA
	personnel 2.4 Validate the proof of concept according to organisational policies and procedures
3. Evaluate software design	3.1 Determine design completeness, accuracy and consistency according to proof of concept prototype 3.2 Validate software design document according to organisational policies and procedures 3.3 Validate database structure, elements and user interface 3.4 Validate code and software consistency according to design document
4. Evaluate the testing requirements	4.1 Review and validate test plans and cases according to organisational requirements 4.2 Document review and validation outcomes 4.3 Submit documentation to required personnel and seek and respond to feedback

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Numeracy	• Uses mathematical formulae to calculate required equipment, undertake measurements and determine response times
Oral communication	• Articulates information and requirements, using effective communication techniques and industry standard technical language intended for audience and environment
Reading	• Interprets and critically analyses complex software-requirement specifications
Writing	• Prepares complex workplace documentation detailing processes and outcomes using required structure, layout and technical programming language
Planning and organising	• Takes audience, purpose and contextual factors into account, when making decisions about what to communicate, with whom, why, and how
Problem solving	• Sequences and schedules complex activities, monitors implementation and manages relevant communication • Takes responsibility for decisions about when, and how, to complete tasks and coordinate with others

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SKILL	DESCRIPTION
	• Uses analytical processes to decide on a course of action, establishing the criteria for deciding between options, and evaluating options against the criteria
Self-management	• Takes full responsibility for identifying relevant organisational protocols and requirement
Technology	• Understands the key principles and concepts underpinning the design, and operation, of digital systems and tools

Unit Mapping Information

Supersedes and is equivalent to ICTPRG520 Validate an application design against specifications.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG546 Validate application designs against specifications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- interpret software specifications and validate software design, source code and testing requirements on at least one occasion.

In the course of the above, the candidate must:

- document processes and outcomes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- database design and implementation relevant to validating application designs
- business and technical modelling using UML tools at intermediate level
- industry standard software development methodologies applicable to validating application designs
- system development life cycle (SDLC)
- language used in object-oriented programming
- open-source development tools
- software-testing techniques relevant to validating application designs.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- tools to create prototype systems

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- static analysis tools
- test plan and test cases.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPRG547 Apply advanced programming skills in another language

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to undertake advanced level programming tasks using another programming language. The language may be an object-oriented language.

It applies to software developers who are required to program code.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Code advanced data structures and algorithms	1.1 Design and document dynamic data structures according to programming task requirements 1.2 Implement dynamic data structures, including double-linked lists and binary trees for coding 1.3 Code using hashing techniques according to programming requirements 1.4 Code sorting algorithm using programming techniques 1.5 Code advanced searching techniques for use with complex data structures
2. Write application and	2.1 Use features of enable inter-process language communication

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ELEMENT	PERFORMANCE CRITERIA
use third-party libraries	through one mechanism 2.2 Use features of language for operating system 'signals' to be captured and responded to 2.3 Use third-party library in construction of an application according to programming techniques 2.4 Write application to work within graphical user interface (GUI) computer environment
3. Debug and test code	3.1 Use integrated development environment (IDE) debugging facilities to debug according to software requirements 3.2 Detect and resolve errors of syntactical, logical and design origin 3.3 Design and document required tests 3.4 Undertake limited testing of produced code and confirm that it complies with technical requirements 3.5 Document the test results
4. Create application	4.1 Develop and document solution according to debugging test results 4.2 Design and document algorithm and construct, and test application according to techniques 4.3 Submit documents to required personnel and seek and respond to feedback according to organisational policies and procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Learning	• Monitors outcomes of decisions and results and identifies key concepts and principles that may be adaptable in the future
Oral communication	• Articulates information and requirements, using effective communication techniques and industry standard technical language intended for audience and environment
Reading	• Interprets, and critically analyses, complex texts and applies the required strategies to construct meaning from complex texts
Writing	• Prepares complex workplace documentation detailing processes and outcomes using required structure, layout and technical programming language

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SKILL	DESCRIPTION
	• Writes and edits code and technical data in a logical manner using required syntax
Planning and organising	• Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others, including required capabilities, efficiencies and effectiveness
Problem solving	• Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information, and identifying, and evaluating, options against the agreed criteria • Uses analytical processes to decide on a course of action, establishing the criteria for deciding between options
Self-management	• Uses systematic processes, setting goals, gathering required information and identifying and evaluating options against agreed criteria
Technology	• Understands the key principles and concepts, underpinning the design and operation of digital systems and tools

Unit Mapping Information

Supersedes and is equivalent to ICTPRG523 Apply advanced programming skills in another language.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG547 Apply advanced programming skills in another language

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design and build at least one advanced application program according to a design document
- code at least one sorting algorithm
- apply at least two different techniques to optimise code.

In the course of the above, the candidate must:

- design and write code using dynamic data structures
- write code using hashing techniques, sorting algorithms and advanced searching techniques
- use language features that enable inter-process communication and responses to operating system signals
- use third-party libraries in the construction of an application, including referencing third-party documentation
- evaluate and document debugging test processes and outcomes
- test and debug code and resolve errors of a syntactical, logical and design origin.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- programming languages applicable to applying advanced programming skills in another language
- languages required for a GUI environment
- developing large-scale applications applicable to applying advanced programming skills in another language
- procedures for programming with complex data structures

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- procedures for using a third-party supplied library for standard programming features.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- software development environment required to apply advanced programming skills in another language
- technical and design documentation
- organisational deliverables
- integrated development environment (IDE).

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPRG548 Develop high-level object-oriented class specifications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to analyse requirements and produce a set of high-level object-oriented class specifications.

It applies to those who are required to develop object designs as part of the systems design process.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Analyse behaviour of objects	1.1 Analyse and document behaviour scenarios according to object design requirements 1.2 Identify classes, objects and abstract data types according to object design requirements 1.3 Prepare class, object, module and process diagrams according to object-oriented class specifications
2. Prepare state model	2.1 Analyse data requirements and iterate data flows according to object design requirements 2.2 Determine and document required state-transition diagrams 2.3 Seek respond to feedback from required personnel, and update abstract data types and specifications according to

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ELEMENT	PERFORMANCE CRITERIA
	feedback
3. Describe roles and responsibilities of classes	3.1 Review functional requirements, assign responsibilities and update class structures according to task requirements 3.2 Determine and document interface and class communication requirements 3.3 Determine and document required interaction diagrams
4. Iterate and review object model	4.1 Review and document finding of current object model, class functionality and data transformation 4.2 Identify and develop class relationships, priorities, and the inheritance hierarchy according to object-oriented class specifications 4.3 Analyse and document class-service requirements and initial test criteria 4.4 Identify and document object processes and reuse classes 4.5 Submit documentation to required personnel and seek and respond to feedback according to organisational requirements

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Oral communication	• Articulates information and requirements, using effective communication techniques and industry standard technical language intended for audience and environment
Reading	• Interprets, and analyses, complex technical documentation
Writing	• Accurately records and completes documentation according to organisational formats and procedures
Teamwork	• Shares knowledge, information and experience openly, liaising with colleagues to achieve the best possible outcome
Planning and organising	• Operates from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation, and identifying and addressing issues
Problem solving	• Uses a range of digitally based technologies to access, extract and share relevant information, in order to achieve the required outcomes • Identifies technical or conceptual issues, and applies analytical processes, to resolve these issues

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SKILL	DESCRIPTION
	• Uses analytical and lateral thinking to review current practices, and to develop new or improved software or
Self-management	• Uses systematic processes, setting goals, gathering required information and identifying and evaluating options against agreed criteria
Technology	• Uses analytical and lateral thinking to review current practices, and to develop new or improved software or systems

Unit Mapping Information

Supersedes and is equivalent to ICTPRG524 Develop high-level object-oriented class specifications.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG548 Develop high-level object-oriented class specifications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- specify and model abstract for at least two different data types
- specify the interface between classes and objects, and document results on at least one occasion.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- configuration management applicable to developing high-level object-oriented class specification
- industry standard object-oriented methodologies that may be used to specify high-level object-oriented class specifications
- industry standard program development methodologies applicable to developing high-level object-oriented class specification
- data modelling techniques
- object-oriented analysis tools
- quality assurance practice applicable to developing high-level object-oriented class specifications.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- business system and user requirement
- unified modelling language (UML) modelling tool.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTPRG549 Apply intermediate object-oriented language skills

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to undertake intermediate level programming tasks using an object-oriented programming language.

It applies to software developers in a variety of fields who are required to produce programs in object-oriented languages.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Build applications	1.1 Determine and document program requirements according to object-orientated programming specifications 1.2 Divide multiple source-code files into logical units and packages and collect data in internal storage 1.3 Implement internal data-sorting and searching facilities according to object-orientated programming specifications 1.4 Employ integrated-development environment facilities and make files to automate program building 1.5 Use facilities in specific language for persisting objects to binary files and confirm program stability
2. Write interactive database programs	2.1 Design, document and implement programs that connect to the required database according to program specifications

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Design, document and implement programs that use language facilities according to program specifications 2.3 Design, document and implement programs that use language facilities to manipulate database structure 2.4 Write programs that deliver transactional integrity according to program requirements
3. Write graphical user interface	3.1 Employ graphical user interface (GUI) framework according to language requirements 3.2 Use standard GUI components according to object-orientated programming specifications 3.3 Respond to user and program-generated events and according to program requirements
4. Debug and test application	4.1 Examine variables and trace running code 4.2 Detect logical and coding errors according to program requirements 4.3 Examine variable contents during execution and detect and correct errors 4.4 Design and document limited tests of code 4.5 Test and document produced code and determine compliance with the program specification

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Learning	• Monitors outcomes of decisions and results and identifies key concepts and principles that may be adaptable in the future
Oral communication	• Articulates information and requirements, using effective communication techniques and industry standard technical language intended for audience and environment
Reading	• Analyses and interprets technical documents
Writing	• Accurately records and completes documentation according to organisational formats and procedures • Writes and edits code and technical data in a logical manner using required syntax
Planning and	• Creates, and selects, a required application that meets the set requirements

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SKILL	DESCRIPTION
organising	
Problem solving	• Identifies technical or conceptual issues, and applies analytical processes, to resolve these issues • Uses analytical and lateral thinking to review current practices, and to develop new or improved software or systems
Self-management	• Uses systematic processes, setting goals, gathering required information and identifying and evaluating options against agreed criteria
Technology	• Uses a range of digitally based technologies to access, extract, and share relevant information in order to achieve the required outcomes

Unit Mapping Information

Supersedes and is equivalent to ICTPRG527 Apply intermediate object-oriented language skills.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG549 Apply intermediate object-oriented language skills

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design and build at least one simple application program from a problem scenario and program specification.

In the course of the above, the candidate must:

- use different object-oriented programming language techniques
- check code optimisation.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- data structures applicable to applying intermediate object-oriented language skills
- object-oriented programming concepts and programming language required to apply intermediate object-oriented language skills
- process and techniques related to use of a graphical user interface (GUI), to interact with an operator
- documenting applications required to apply intermediate object-oriented language skills.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- oriented design structures
- programming languages that support object-oriented development
- integrated development environment (IDE)

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- database management system (DBMS).

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPRG550 Perform ICT data conversions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to translate Information and Communications Technology (ICT) data from one format to another, by means of a data conversion process.

It applies to those in support and implementation roles who are required to convert data from one system to another.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare system for conversion	1.1 Obtain data stores required for conversion 1.2 Trial conversion work in isolated environment, secure from the production system and confirm backup solutions 1.3 Map and document required data fields according to conversion requirements 1.4 Determine field validation requirements from conversion plans, including data field legal ranges 1.5 Determine actions to be taken with the fields or records that are rejected by the conversion plan
2. Design system conversion	2.1 Design and document data conversion program modules from conversion specifications

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Code and test data conversion program modules according to conversion specifications 2.3 Confirm data conversion and test the converted production data 2.4 Document testing outcomes according to organisational policies and procedures
3. Perform data conversion	3.1 Estimate and document conversion time and procedures 3.2 Prepare production system for data conversion, protect data and take off-line 3.3 Determine and document data rejected and reason for rejection by conversion routines 3.4 Execute conversion program modules according to conversion plan 3.5 Document conversion process and submit to required personnel

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Reading	• Interprets and analyses complex technical documentation
Writing	• Accurately records and completes documentation according to organisational formats and procedures • Writes and edits code and technical data in a logical manner using required syntax
Teamwork	• Liaises with others to check own knowledge and confirm that the objective is being met
Planning and organising	• Takes responsibility for planning, sequencing and prioritising tasks, in order to achieve the required outcomes
Problem solving	• Uses nuanced knowledge of context to demonstrate knowledge of anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise
Technology	• Uses a range of digital tools and sophisticated techniques to meet the desired outcomes • Identifies technical or conceptual issues, and applies analytical processes, to resolve these issues

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SKILL	DESCRIPTION
	• Uses analytical and lateral thinking to review current practices, and develop new or improved software or systems

Unit Mapping Information

Supersedes and is equivalent to ICTPRG528 Perform ICT data conversion.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG550 Perform ICT data conversions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- define inherent data requirements, remodel data and code conversion programs on at least one occasion.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- hardware and software products applicable to performing data conversions
- data conversion tools and data modelling methodologies applicable to performing data conversions
- legacy systems conversions required to perform data conversions
- industry standard database management system (DBMS) modelling applicable to performing data conversions.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- source data
- business quality assurance rules associated with data.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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ICTPRG551 Apply testing techniques for software development

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to develop test strategies and implement tests to assure reliability and quality of an application.

It applies to quality assurance analysts, test analysts, testers, system testers, software testers, test leads and software developers, responsible for activities including test plan preparation, execution and maintenance, reporting of tests and defect management in an application.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan and design test	1.1 Analyse and review software development specifications against organisational requirements 1.2 Determine and document test context, scope, standard and methodology 1.3 Determine and document test types, tools and input data requirements 1.4 Design and document test plan and test cases according to software testing specifications 1.5 Submit documentation to required personnel and seek and respond to feedback
2. Prepare test environment	2.1 Review documents and determine required preparation for

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ELEMENT	PERFORMANCE CRITERIA
	test environment 2.2 Determine and document test environment according to software testing requirements 2.3 Build and set up test environment according to software testing requirements
3. Implement and execute test	3.1 Build input data for testing according to software testing requirements 3.2 Create test suite according to software testing requirements 3.3 Execute test cases according to software testing requirements 3.4 Create test record and store test results according to software testing requirements
4. Manage defect and testing process	4.1 Evaluate and document test results according to software testing requirements 4.2 Track, defect and verify fixes and document outcomes

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Oral communication	• Articulates information and requirements, using effective communication techniques and industry standard technical language intended for audience and environment
Reading	• Reviews, and evaluates, technical and business requirements
Writing	• Prepares complex workplace documentation detailing processes and outcomes using required structure, layout and technical programming language
Planning and organising	• Takes responsibility for planning, sequencing and prioritising processes, and tasks, to achieve the required outcomes
Problem solving	• Applies systematic and analytical problem-solving processes, to develop the required security access control strategies
Self-management	• Uses systematic processes, setting goals, gathering required information and identifying and evaluating options against agreed criteria
Technology	• Uses a range of digital tools and sophisticated techniques to meet the desired outcomes

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Unit Mapping Information

Supersedes and is equivalent to ICTPRG529 Apply testing techniques for software development.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG551 Apply testing techniques for software development

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop a test-plan document and test cases to verify completeness, reliability and performance of an application and software on at least one occasion.

In the course of the above, the candidate must:

- document and manage test results
- perform application debugging process
- re-test application.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- industry standard programming language applicable to applying testing techniques for software development
- input and output requirements applicable to testing software development
- software development life cycle (SDLC) methodologies
- system layers including data network, hardware, operating system, database management systems, web servers, application servers, and client deployment
- processes and techniques related to small-size application development.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- business, functional, system and user requirements

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- system for testing.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTPRG553 Create and develop REST APIs

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to create and implement representational state transfer (REST or RESTful) application program interfaces (APIs) in order to request and manipulate data from data sources.

The unit applies to those working as senior software developers, senior back end developers or full stack developers, and responsible for managing information and communications technology (ICT) in small-to-large enterprises.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Create new project	1.1 Establish need and application of REST APIs according to business needs 1.2 Review, evaluate and select REST API framework according to required programming language and business needs 1.3 Review, evaluate and select required integrated development environment (IDE) 1.4 Create project using IDE according to business needs 1.5 Configure and implement RESTful API in project
2. Build REST API endpoints	2.1 Build REST API end point using GET method and return a collection of records

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Build REST API endpoint and return a single record 2.3 Configure REST API endpoint using POST and PUT method according to function 2.4 Build REST API endpoint using DELETE method 2.5 Test methods and confirm response status code reflects function of REST API according to business needs
3. Enable cross origin resource sharing (CORS)	3.1 Update REST API GET, POST, PUT and DELETE endpoints and confirm that simple cross-origin requests are allowed 3.2 Review and select REST API client and test simple CORS requests 3.3 Update REST API GET, POST, PUT and DELETE endpoints and allow pre-flight cross-origin requests using OPTION method 3.4 Test CORS for pre-flight request
4. Secure REST API	4.1 Review, evaluate and select method for securing REST API according to business needs 4.2 Implement authentication and authorisation for securing REST API endpoints
5. Finalise REST API	5.1 Review and evaluate industry tools and conventions for documenting REST API endpoints according to business needs 5.2 Develop documentation for REST API endpoints 5.3 Validate documentation against REST API endpoints and submit to required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Critically analyses documentation, instructions and data from a variety of sources and records, and consolidates information, in order to determine requirements and steps forwards • Identifies and interprets technical material to determine and confirm job, business and systems requirements
Writing	• Demonstrates sophisticated writing skills using specialised language, technical language and scripts and required conventions to document work

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SKILL	DESCRIPTION
Problem solving	• Applies systematic and analytical decision- making processes for complex situations and bug code • Uses nuanced understanding of context to recognise anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise
Self-management	• Takes full responsibility for following policies, procedures and legislative requirements, and identifies organisational implications of new legislation or regulation, including privacy and data use legislation • Monitors progress of plans and schedules, and reviews and changes them, to meet new demands and priorities • Investigates new and innovative ideas, as a means by which to continuously improve, work practices and processes through consultation, formal and analytical thinking
Technology	• Uses complex scripts and tools required within complex systems, applications, operation systems, the internet and required software and hardware components • Uses cyber security procedures and techniques to maintain data security, and systems and application integrity

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG553 Create and develop REST APIs

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- build and test at least one representational state transfer (REST or RESTful) application program interface (API) endpoint and confirm functionality.

In the course of the above, the candidate must:

- enable cross origin resource sharing (CORS)
- use GET, POST, PUT, DELTE and PATCH methods
- secure REST API with authentication and authorisation
- document REST API work.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- features and different applications that applies to the HTTP network protocol
- features and anatomy of REST API HTTP request and response, including HTTP headers and body
- language used in programming language
- HTTP GET, POST, PUT and OPTIONS methods and features of each
- CORS methodology.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

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- client/user agent
- integrated development environment (IDE)
- the internet, including connectivity
- required hardware, software and applications.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPRG554 Manage data persistence using noSQL data stores

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to implement a data store and manage data persistence using non structured query language (NoSQL) to provide automatic scaling as well as high performance and availability over semi-structured data.

The unit applies to those working as senior software developers, senior back end developers or full stack developers, and responsible for managing information and communications technology (ICT) in small-to-large enterprises (SMEs).

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Review and select noSQL options	1.1 Confirm use and application for noSQL according to business requirements and needs 1.2 Research and compare horizontal and vertical scaling and confirm relevance and benefit of horizontal scaling according to business requirements 1.3 Research and compare noSQL technologies and traditional relational data models 1.4 Research, review and select noSQL vendor technologies according to business requirements
2. Determine and create	2.1 Design and determine data storage requirements from noSQL

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ELEMENT	PERFORMANCE CRITERIA
storage of data types	data store according to selected vendor technology and business requirements 2.2 Review and select required types of noSQL data store according to business requirements 2.3 Create partition key and determine storage place of data items 2.4 Review and determine required partition key and ensure effective distribution of storage across partition
3. Build and configure indexes	3.1 Determine and select required sort key according to business requirements 3.2 Calculate, determine and configure read and write through-puts according to business requirements 3.3 Determine, configure and create indexes for optimising data retrieval queries 3.4 Determine and create additional indexes 3.5 Optimise data queries and retrievals for indexes according to business requirements 3.6 Determine and configure time-to-live (TTL) on data objects according to business requirements
4. Use queries and retrieve objects	4.1 Research and select required API client for interacting with noSQL data store according to business requirements 4.2 Substantiate and connect API client to noSQL data store instance 4.3 Insert single data object into noSQL datastore using selected client application 4.4 Insert multiple items in single operation 4.5 Use query and select single object 4.6 Use query and retrieve multiple objects in batch 4.7 Perform query against index 4.8 Perform query to select required attributes and project results
5. Confirm interaction of objects	5.1 Delete single and multiple objects according to business requirements 5.2 Update single and multiple objects according to business requirements 5.3 Persist objects with different data types 5.4 Configure and confirm change event triggers and notifications according to business needs 5.5 Test, fix and ensure responses and trigger notifications work according to business requirements 5.6 Review and confirm data is encrypted and authorisation and authentications are active according to user and client access

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ELEMENT	PERFORMANCE CRITERIA
	requirements 5.7 Test and fix data persistence process according to business requirements 5.8 Document and finalise work according to business requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Critically analyses documentation, instructions and data from a variety of sources and records, and consolidates information in order to determine requirements and steps forwards • Identifies and interprets technical material to determine and confirm job, business and systems requirements
Writing	• Demonstrates sophisticated writing skills using specialised language, technical language and scripts and required conventions to document work
Planning and organising	• Researches, plans and sequences complex tasks, efficiently and effectively
Problem solving	• Applies systematic and analytical decision- making processes for complex and non-routine situations and bug code • Uses nuanced understanding of context to recognise anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise
Self-management	• Monitors progress of plans and schedules, and reviews and changes them, to meet new demands and priorities • Investigates new and innovative ideas, as a means by which to continuously improve, work practices and processes through consultation, formal and analytical thinking
Technology	• Uses complex scripts and tools required within complex systems, applications, operation systems, the internet and required software and hardware components • Uses cyber security procedures and techniques to maintain data security, and systems and application integrity

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Unit Mapping Information

No equivalent unit. New unit.

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Assessment Requirements for ICTPRG554 Manage data persistence using noSQL data stores

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- create at least three different queries, including updating, deleting and creating data types
- create at least two indexes.

In the course of the above, the candidate must:

- specify partition and sort keys
- optimise the data.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- benefits and functions of noSQL database and schema free data persistence, as well as traditional relational data models
- methods and different features and functions between scaling out and scaling up (horizontal and vertical)
- language used in required programming language for noSQL applications
- partitioning in a noSQL environment and its related terms
- functions and features for time-to-live (TTL) requirements
- authorisation and authentications procedures and levels of responsibility according to client access requirements
- distribution of data storage across partitions
- debugging and testing methodologies and techniques
- functions and features of sort keys in noSQL storage
- features of transport encryptions, authentication and authorisation
- different noSQL data store formats, including:
  - key value

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  - document based
  - column based
  - graph based
- different noSQL data types, including:
  - numeric
  - string
  - boolean
  - complex
  - date time.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- an open source or commercial NOSQL database
- the internet, including connectivity
- required hardware, software and applications.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTPRG555 Implement Object Relational Mapping Framework for data persistence

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to implement an Object Relational Mapping (ORM) framework to map, retrieve and manage object persistence in any programming language.

The unit applies to those working as senior software developers, senior back end developers or full stack developers, and responsible for managing Information and Communications Technology (ICT) in small-to-large enterprises (SMEs).

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish ORM project	1.1 Confirm use, application and need for ORM framework according to business needs 1.2 Review, select and implement ORM framework according to business needs 1.3 Design, develop and build domain object model according to business needs 1.4 Review and select data persistence technology for data store 1.5 Create mapping between domain object model and

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	selected data store
2. Retrieve and manipulate objects according to ORM framework	2.1 Instantiate single object in domain model and persist in data store according to ORM framework 2.2 Instantiate collection of objects in domain model and persist in data store according to ORM framework 2.3 Retrieve objects from data store 2.4 Update object and persist changes back to data store using ORM framework 2.5 Delete data in data store 2.6 Detach data and reattach data 2.7 Implement eager loading of related domain 2.8 Implement lazy loading of related domain objects
3. Manage transactions, concurrency and errors	3.1 Handle transaction commits and rollbacks effectively according to ORM framework and business needs 3.2 Handle data persistence and concurrency effectively according to ORM framework and business needs 3.3 Implement and confirm error-handling 3.4 Test and confirm transaction success according to business needs

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Identifies and interprets technical material to determine and confirm job, business and systems requirements
Writing	• Demonstrates sophisticated writing skills using specialised language, technical language and scripts and required conventions
Planning and organising	• Researches, plans and sequences complex tasks, efficiently and effectively
Problem solving	• Applies systematic and analytical decision- making processes for complex and non-routine situations and bug code • Uses nuanced understanding of context to recognise anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise
Technology	• Uses complex scripts and tools required within complex systems, applications, operation systems, the internet and required software and hardware components

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SKILL	DESCRIPTION
	• Uses cyber security procedures and techniques to maintain data security, and systems and application integrity

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG555 Implement Object Relational Mapping Framework for data persistence

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- use ORM framework to handle at least two different transactions
- use ORM framework to manage data persistence to create, update, read and delete operation at least once
- use ORM framework to handle concurrency when working with data persistence
- confirm and use commands affecting at least two entities to the data source.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- functions, features and uses of a database and selected data store
- language used in object-oriented (OO) programming
- different ORM framework methodologies, including:
  - database first methodology
  - object first methodology
- functions and features of an ORM framework
- testing techniques used for ORM framework
- functions and features of transactions, commits and rollbacks
- lazy and eager loading or persistent data objects
- function and use of concurrency
- testing processes for transaction success.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

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This includes access to:

- integrated development environment (IDE) required to use ORM frameworks
- the internet, including connectivity
- hardware, software and applications required for the performance evidence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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ICTPRG556 Implement and use a model view controller framework

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to use a model view controller (MVC) framework within a development environment that creates and develops dynamic web architecture by convention in any language.

The unit applies to those working as senior software developers, senior back end developers or full stack developers, and responsible for managing Information and Communications Technology (ICT) in small-to-large enterprises (SMEs).

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Create MVC project	1.1 Confirm use for MVC framework according to business needs 1.2 Review, evaluate and select Model View Controller (MVC) framework and required Integrated Development Environment (IDE) according to programming language and business needs 1.3 Review, evaluate and select MVC project template and tools 1.4 Create new project using IDE and project template
2. Use MVC framework	2.1 Create and add controllers in project according to business needs

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	2.2 Create and add dynamic views 2.3 Connect view to controller 2.4 Send request from client to browser 2.5 Confirm controller receives request and builds MVC model 2.6 Confirm dynamic view is returned 2.7 Develop Controller Model and View for handling HTTP GET, POST, PUT and DELETE requests 2.8 Test and ensure function of requests
3. Finalise MVC project	3.1 Run program according to MVC framework and project requirements 3.2 Test and confirm project function 3.3 Use required debugging tools to inspect request data and model binding in controller handler 3.4 Use debugging tools to inspect HTTP request and response and confirm HTTP redirect functions 3.5 Document and save work according to business procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	**DESCRIPTION**
Reading	• Critically analyses documentation, instructions and data from a variety of sources and records, and consolidates information, in order to determine requirements and steps forwards • Identifies and interprets technical material to determine and confirm job, business and systems requirements
Writing	• Demonstrates sophisticated writing skills using specialised language, technical language and scripts and required conventions • Writes and edits code and technical data in a logical manner using required syntax
Planning and organising	• Researches, plans and sequences complex tasks, efficiently and effectively
Problem solving	• Applies systematic and analytical decision- making processes for complex and non-routine situations and bug code • Uses nuanced understanding of context to recognise anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise
Self-management	• Monitors progress of plans and schedules, and reviews and changes

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SKILL	DESCRIPTION
	them, to meet new demands and priorities • Investigates new and innovative ideas, as a means by which to continuously improve, work practices and processes through consultation, formal and analytical thinking
Technology	• Uses complex scripts and tools required within complex systems, applications, operation systems, the internet and required software and hardware components • Uses cyber security procedures and techniques to maintain data security, and systems and application integrity

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG556 Implement and use a model view controller framework

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- create at least one model view controller (MVC) project and confirm functionality of framework, including:
  - HTTP handers and routes for GET, POST, PUT and DELETE requests
  - HTML templates, view models and dynamic rendering
  - HTTP request, responses and redirects.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- language used in object-oriented (OO) programming
- HTTP protocol
- functions and features of debugging and testing tools
- principles of model view controller design pattern, conventions and architecture, including:
  - scalability
  - maintainability
  - reusability
- features, structures, logic and modes of interactions between models, controllers and views, including:
  - HTTP Request/Response and redirects
  - HTTP request handlers, routes and parameters
  - Query strings and key/vale pairs
  - model binding
  - convention over configuration

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- HTML language, templates and dynamic rendering
- view models and data models.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- model view controller framework
- integrated development environment (IDE) required to implement MVC frameworks
- the internet, including connectivity
- required hardware, software and applications.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTPRG603 Develop advanced mobile multi-touch applications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to design, develop, debug, test and deploy applications for hand-held digital devices using the advanced features of these devices.

It applies to application developers, software developers, game developers, designers and testers, who work in the area of mobile applications development.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish and work on target platform	1.1 Identify and document application requirements according to organisational requirements 1.2 Establish platform and install required development tools, and environment 1.3 Deploy completed applications target device and enable public download 1.4 Test application using an emulator and align to organisational requirements
2. Develop application for multi-touch device	2.1 Design and code application and respond to events according to device requirements 2.2 Design and code application and respond to taps, touches and gestures

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ELEMENT	PERFORMANCE CRITERIA
	2.3 Design approach according to device requirements 2.4 Develop application and use autorotation and auto-resizing facilities according to device requirements
3. Develop code using features of mobile device	3.1 Determine and document features of mobile device according code specifications 3.2 Write code requiring web connectivity according to device requirements 3.3 Write code and enable communication with another device 3.4 Write code using application programming interface (API) and check relation to at least one other advanced device feature
4. Use available data persistence facilities	4.1 Write code to read and write to devices file system 4.2 Synchronise data between device and external data sources 4.3 Write code to make use of available database facilities on chosen device
5. Develop secure applications	5.1 Determine, document and apply performance objectives 5.2 Apply performance objectives according to organisational policies and procedures 5.3 Implement memory management and eliminate zombie processes according to application security requirements

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Numeracy	• Extracts, evaluates and manipulates the mathematical information embedded in a range of tasks and texts
Oral communication	• Articulates information and requirements, using effective communication techniques and industry standard technical language intended for audience and environment
Reading	• Identifies, analyses, and interprets complex technical and business protocol material in order to determine business requirements
Writing	• Accurately records and completes documentation according to organisational formats and procedures • Writes and edits code and technical data in a logical manner using required syntax
Initiative and	• Demonstrates sophisticated knowledge of the principles, concepts,

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SKILL	DESCRIPTION
enterprise	language and practices associated with the digital world, and uses these to troubleshoot, and understand the uses and potential of new technology
Planning and organising	• Uses a mix of intuitive and formal processes to identify key information and issues, evaluate alternative strategies, anticipate consequences, implementation issues and contingencies • When dealing with complex issues, may use intuition to identify common problems in building, and deploying mobile applications, and completing basic program debugging
Problem solving	• Uses nuanced knowledge of context to demonstrate and knowledge of anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise
Self-management	• Responds to both, explicit and implicit, protocols within familiar work contexts
Technology	• Demonstrates and awareness of the importance of knowledge, monitoring, and controlling access to digitally stored and transmitted information

Unit Mapping Information

Supersedes and is equivalent to ICTPRG601 Develop advanced mobile multi-touch applications.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG603 Develop advanced mobile multi-touch applications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design, build and test applications for mobile devices
- deploy applications onto at least two different types of mobile devices.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard hardware and networking, requirements of a multi-touch application
- object-oriented programming applicable to advanced mobile multi-touch applications development
- user interface designs and their application in developing multi-touch applications
- web design methodology and its integration with hand-held devices
- industry standard mobile devices that use multi-touch technologies
- extensible markup language (XML) programming and web services applicable to developing multi-touch applications
- industry standard software application development methodologies.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- at least two mobile devices
- integrated development environment (IDE)
- the internet and web services
- the server system

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- industry standard tools and licences required for applicable platform.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTPRG605 Manage development of technical solutions from business specifications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to manage the process of compiling client business specifications to produce business solutions.

It applies to those who manage complex technology projects within the Information and Communications Technology (ICT) industry.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine business requirements	1.1 Determine and document technical and organisational requirements 1.2 Identify, summarise and document organisational business model 1.3 Determine, manage and document key stakeholder requirements
2. Evaluate impact of technical requirements	2.1 Review and document business problems, opportunities and objectives 2.2 Review hardware, software and network requirements 2.3 Determine and document processes requiring changed by

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ELEMENT	PERFORMANCE CRITERIA
	the business solution 2.4 Determine and document expected impact of technical requirements on organisational business activities
3. Produce technical business solutions	3.1 Determine and document solution implementation costs 3.2 Determine and document recommendations for supplier products 3.3 Finalise and document technical solutions and align to organisational requirements

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Numeracy	• Uses mathematical formulas and calculations to estimate and plan project costs
Oral communication	• Uses listening and questioning techniques to convey client requirements, and articulate complex information using specific language required for audience
Reading	• Demonstrates knowledge of and interpretation of complex technical and operational documentation, to determine and confirm job requirements
Writing	• Prepares reports, required documentation expressing ideas and solutions and correspondence for specific audiences according to organisational procedures
Teamwork	• Actively identifies the requirements of important communication exchanges, selecting required channels, format, tone and content to suit the purpose and audience • Fosters a collaborative culture within own sphere of influence, facilitating a sense of commitment and cohesion, and highlighting, and using the strengths of those involved
Planning and organising	• Operates from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation, and identifying and addressing issues
Problem solving	• Uses a range of strategies to store, access and organise virtual information, recognising that design choices will influence what information is retrieved, and how it may be interpreted, and used • Is aware of the importance of knowledge, monitoring and controlling access to digitally stored and transmitted information

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SKILL	DESCRIPTION
	• Uses a mix of intuitive and formal processes to identify key information and issues, evaluate alternative strategies, anticipate consequences, implementation issues and contingencies • Uses a nuanced knowledge of context to adapt varied business procedures to requirements, depending on operational contingencies, risk situations and environments
Self-management	• Uses systematic processes, setting goals, gathering required information and identifying and evaluating options against agreed criteria
Technology	• Demonstrates sophisticated knowledge of principles, concepts, language and practices associated with the digital world and uses these to troubleshoot, and understand, the uses and potential of new technology

Unit Mapping Information

Supersedes and is equivalent to ICTPRG602 Manage the development of technical solutions from business specifications and ICTTEN516 Produce technical solutions from business specifications.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG605 Manage development of technical solutions from business specifications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- evaluate organisational requirements to produce technical solutions and apply design concepts on at least one occasion.

In the course of the above, a candidate must:

- document outcomes and processes against accepted industry practices.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- business processes applicable to managing development of technical solutions
- compatibility issues and resolution procedures relating to managing development of technical solutions
- configuration of internet protocol (IP) networks and desktop applications and the operating system (OS) applicable to managing development of technical solutions
- linking processes and procedures
- industry standard technologies, such as:
  - access and core networks
  - information and communications technology (ICT) network topologies
  - mobile cellular networks
  - network protocols and OS
  - optical networks and principles
  - radio frequency (RF) networks and principles
  - radio frequency identification (RFID) hardware and software
  - security protocols, standards and data encryption

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- development platform that provides the tools to build, and deploy, applications into target platform environments.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- organisation's functional requirements and technical specifications
- database and simulation software
- organisational guidelines
- network or computer layout
- site-design software and hardware
- information on applicable ICT business solutions.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTPRG614 Create cloud computing services

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to design, build, test and deploy web services and cloud computing applications to specifications.

It applies to individuals in software engineering roles with the Information and Communications Technology (ICT) skills required to create and install web services and cloud computing applications.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Design web service and cloud computing application	1.1 Identify web service and cloud computing application requirements 1.2 Determine development environment and tools required to create web service and cloud computing application 1.3 Define required web service and cloud computing application architecture and framework
2. Build web service and cloud computing application	2.1 Determine required web service functionality 2.2 Build and develop required web service 2.3 Determine required cloud application requirements 2.4 Build cloud computing application in determined environment to meet required functionality

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ELEMENT	PERFORMANCE CRITERIA
3. Test web service and cloud computing application	3.1 Test web service functionality according to technical specifications 3.2 Test cloud computing functionality according to technical specifications 3.3 Seek and respond to feedback from required personnel
4. Deploy web service and cloud computing application	4.1 Deploy web service and cloud computing application to required environment 4.2 Document work and submit and obtain sign off from required personnel 4.3 Seek and respond to feedback from required personnel as required

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Interprets complex technical and operational documentation to determine and confirm job requirements
Writing	• Prepares complex documentation conveying completed developments using detailed language • Writes and edits code and technical data in a logical manner using required syntax and language
Oral Communication	• Uses listening and questioning techniques to confirm requirements and articulate complex concepts and matters using relevant industry for intended audience
Self-management	• Demonstrates a sophisticated knowledge of principles, concepts, language and practices associated with the digital world and uses them to troubleshoot and understand the uses and potential of new technology • Demonstrates knowledge of the importance of monitoring and controlling access to digitally stored and transmitted information
Planning and organising	• Uses a broad range of strategies to store, access and organise virtual information and demonstrates the knowledge that design choices will influence what information is retrieved and how it is interpreted and used
Problem solving	• Uses a mix of intuitive and formal processes to identify key information and issues, evaluate alternative strategies, anticipate consequences and consider implementation issues and contingencies

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SKILL	DESCRIPTION
	• Uses knowledge of context to address common problems in operating a web service and a cloud computing application and performs basic debugging when required

Unit Mapping Information

Supersedes and is equivalent to ICTPRG604 Create cloud computing services.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG614 Create cloud computing services

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, and to:

- design, build, test and deploy
  - at least one web service to specification that can be accessed and used from a separate web application
  - at least one cloud computing application to specification that can be accessed from different portals.

In the course of the above, the candidate must:

- document completed developments.

Knowledge Evidence

The candidate must demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit. This includes knowledge of:

- agile methodology to design, build, test and deploy web services and cloud computing applications, including for:
  - determining user needs and required functionality of web services and cloud computing application
  - developing uptime strategy for designed services
- characteristics of current and emerging cloud delivery models
- development tools required to produce services deployable through cloud computing
- internet infrastructure necessary for cloud computing
- object-oriented programming and its application to cloud computing
- required languages for database access and manipulation on web.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- client and functionality requirement
- integrated development environment (IDE) for determined language
- database server with tools to access data source and develop queries
- web server for determined environment in performance evidence
- internet and web browser.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTRFN406 Maintain hybrid fibre coaxial broadband cable network

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to conduct routine maintenance tasks, analysing results and initiating corrective action.

It applies to individuals working as field officers from telecommunications carriers, service providers and contractors. They combine a broad range of optical and radio frequency (RF) technical skills with organisational skills to maintain the hybrid fibre coaxial (HFC) broadband cable network, generally with limited supervision and guidance.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Unit Sector

Telecommunications – radio frequency networks

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential	*Performance criteria describe the performance needed to demonstrate achievement of the element.*

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outcomes	
1. Prepare for routine maintenance of broadband cable network	1.1 Obtain relevant legislation, codes, regulations and standards for given work 1.2 Determine HFC network elements requiring maintenance and obtain maintenance details from various HFC manufacturer equipment manuals 1.3 Plan detailed routine maintenance schedule and discuss with all relevant personnel 1.4 Notify network operations centre (NOC) of proposed maintenance details and maintenance schedule 1.5 Assess potential impact of proposed maintenance on clients and network, and plan for minimal possible outage or deferral of maintenance 1.6 Obtain necessary tools and resources, and test equipment to undertake maintenance 1.7 Ascertain and record recent network stability and network performance
2. Undertake routine HFC network maintenance tasks	2.1 Conduct routine maintenance tasks according to documented enterprise instructions, following work health and safety (WHS) and environmental requirements, and record results 2.2 Protect network from excessive interference or degradation of service during maintenance routines 2.3 Monitor relevant alarms during running of maintenance tasks and report incidences to NOC 2.4 Escalate unresolved faults according to established enterprise procedure 2.5 Conduct performance measurements following routine maintenance schedule
3. Analyse results and initiate corrective action	3.1 Assess outcomes of performance measurements and maintenance routines to ensure they are according to specification 3.2 Analyse identified problems for likely impact and repair within capability, and initiate or escalate repair action where repair is beyond capability 3.3 Undertake outage if required in conjunction with NOC and according to prescribed enterprise outage plan 3.4 Record problems and incidences in maintenance log for future action as required by maintenance agreement 3.5 Verify alarms to ensure maintenance routines did not generate further problems

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Description
Reading	• Recognises and interprets enterprise, regulatory and technical information from relevant sources to determine all specifications and frameworks
Writing	• Uses clear, specific and industry related terminology to complete and update workplace documentation and in written communications to relevant personnel
Oral Communication	• Liaises with a diverse range of personnel to provide advice and guidance using relevant language • Uses listening and questioning techniques to confirm understanding
Numeracy	• Interprets numerical information and applies basic calculations to conduct performance measurements
Navigate the world of work	• Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work, with specific reference to safety and environmental requirements • Seeks advice from others when a situation becomes too complex to manage personally
Get the work done	• Determines job priorities, resources and equipment and works logically and systematically to undertake clearly defined and familiar tasks • Implements actions according to a predetermined plan, making slight adjustments if necessary and addressing some unexpected issues • Takes responsibility for routine decision making by selecting from a range of predetermined options in routine situations, identifying and taking situational factors into account • Responds to typical problems in different situations and implements standard solutions • Understands the purposes and specific functions of common digital systems and uses them effectively to complete routine tasks • Uses experiences to evaluate and identify improvements for future work

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTRFN406 Maintain hybrid fibre coaxial broadband cable network (Release 2)	ICTRFN406 Maintain hybrid fibre coaxial broadband cable network (Release 1)	Updates to performance evidence and knowledge evidence. Updates to template to apply consistent format between units.	Equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTRFN406 Maintain hybrid fibre coaxial broadband cable network

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- determine the performance of and maintenance requirements for the hybrid fibre coaxial (HFC) broadband cable
- prepare a maintenance schedule and planned activities, and arrange resources
- carry out maintenance activities following appropriate procedures and techniques, using approved equipment where specified
- perform radio frequency (RF) and optical measurements and analyse results
- administer corrective measures where required, and verify and document actions
- comply with site risk control, work health and safety (WHS), environmental, quality and communication requirements.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- the following terms: 16 QAM, 64 QAM, 256 QAM
- relevance of alternating current (AC) and direct current (DC) electrical equipment in HFC broadband cable network
- forward error correction (FEC) and Reed-Solomon Code

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- bit error ratio (BER) and acceptable values
- constellation diagrams
- digital modulation techniques
- Data Over Cable Service Interface Specification (DOCSIS) cable modem characteristics
- future broadband cable network (BCN) and migration to all-optical cable networks
- HFC broadband cable network principles, architecture and associated equipment
- minimum standards allowable in the return path for ingress
- optical fibre characteristics
- quadrature phase shift keying (QPSK)
- services carried on the HFC broadband cable network
- spectrum utilisation of the return path showing location of telephony and data channels, and signalling and test frequencies
- video stream transport formats including:
  - digital video broadcasting (DVB) - asynchronous serial interface (ASI)
  - high definition serial digital interface (HD-SDI)
  - motion picture experts group 2 (MPEG-2)
  - standard definition serial digital interface (SD-SDI)
  - modulation error ratio (MER) and acceptable values
- types of amplifier and placement in a HFC broadband cable network
- bi-directional RF amplifier and unidirectional RF amplifier
- eye diagram interpretation
- frequency spectrum and RF frequency plan HFC broadband cable network
- use of passive devices including filter, attenuator, power inserter, coaxial splitter, coupler, multitap and equaliser
- calculation of overall gain or loss when given signal levels in dBmv
- coaxial transmission line characteristics including cable tilt or slope
- forward path from head end to subscriber showing expected signal levels at key points
- power supply requirements in a HFC broadband cable network
- return path from subscriber to head end showing expected signal levels at key points
- RF amplifier characteristics including gain and tilt adjustment, equalisation and overload
- forms of ingress and where they may fall in the return path
- set up, operation and interpretation of test equipment for complex tests including:
  - optical time domain reflectometer (OTDR)
  - optical power meter
  - digital signal level meter
  - RF sweep equipment
  - spectrum analyser
- hand and power tools required to assemble and disassemble equipment in pits and in elevated work situations.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- sites on which HFC maintenance may be conducted
- maintenance tools and test instruments currently used in industry
- relevant regulatory, enterprise and equipment documentation that impact on maintenance activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTRFN407 Conduct radio frequency measurements

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to plan and undertake testing, including measuring, recording and interpreting results within all legislative and regulatory frameworks.

It applies to technicians who work in the field to install, maintain, upgrade and commission radio frequency (RF) telecommunications systems. These systems may include satellite and microwave, radio or television broadcasting, pay television, free to air television, radio frequency identification (RFID), mobile radio, cellular and worldwide interoperability for microwave access (WiMAX) networks.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Radio Frequency Networks

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan to conduct RF measurements	1.1 Access site according to enterprise procedures 1.2 Determine type of measurements required based on industry environment 1.3 Assess impact of conducting measurements on network and advise clients and appropriate person 1.4 Assess previous measurement data as required
2. Take RF	2.1 Check that prescribed safety arrangements associated with RF radiation

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Elements	Performance Criteria
measurements	are in place and take corrective action as required 2.2 Monitor work activity to ensure it meets site specifications and relevant legislation, regulations, codes and standards 2.3 Select industry approved test equipment 2.4 Configure test equipment according to manufacturer specifications 2.5 Conduct measurements according to planned requirements 2.6 Assess RF levels at occupational and non-occupational distances 2.7 Record all measurements and test configurations according to industry standards
3. Analyse measurement outcomes	3.1 Verify measurements against relevant standards and vendor specifications 3.2 Assess problems and variance for corrective action, and notify appropriate person according to enterprise procedures 3.3 Record processes and recommendations according to industry standards
4. Document measurement results	4.1 Complete customer documentation outlining results and recommendations 4.2 Notify customer to obtain sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Recognises and interprets information from relevant sources to determine technical specifications and regulatory and legislative requirements
Writing	• Uses clear, specific and industry related terminology to complete and update workplace documentation and in written communications with clients
Oral Communication	• Uses specific and relevant language and appropriate tone to provide and ask for technical, operational and legal advice • Uses listening techniques to determine understanding
Numeracy	• Evaluates and reviews numerical information when undertaking test measurements, interpreting results, calibrating equipment and evaluating performance
Navigate the world of	• Takes personal responsibility for adherence to legal and regulatory

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Skill	Description
work	requirements, with specific reference to safety • Understands the nature and purpose of own role and associated responsibilities
Get the work done	• Determines job priorities and works logically and systematically to undertake clearly defined and familiar tasks • Identifies and assembles the instruments, equipment and access required to competently undertake the job • Takes responsibility for routine decision making by selecting from a range of predetermined options in routine situations, identifying and taking situational factors into account • Diagnoses and implements standard solutions to minimise measurement errors

Unit Mapping Information

ICTRFN407 Conduct radio frequency measurements supersedes and is equivalent to ICTRFN401 Conduct radio frequency measurements.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTRFN407 Conduct radio frequency measurements

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- plan and conduct radio frequency (RF) testing using appropriate equipment and instruments
- measure, record and interpret test results
- monitor work to meet related work health and safety (WHS) requirements and work practices.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes:

- legislation, regulations, codes, standards and enterprise procedures relevant to work activity
- principles and operation of the following:
  - analog and digital modulation methods
  - logarithmic units
  - standard test procedures and test set-ups
  - transmitter and receiver architectures
- principles of radio frequency (RF) operation including:
  - instrument and features and types
  - radiation hazards
  - safety practices.

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Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s for RF measurements
- a range of test equipment and items to test
- relevant regulatory and equipment documentation that impact on work activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAD402 Develop and present ICT feasibility reports

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to research and analyse system solutions and present a feasibility report to the client.

It applies to individuals who investigate potential solutions within the context of an Information and Communications Technology (ICT) project, who are required to and work within a team under some level of supervision.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems analysis and design

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Confirm client requirements	1.1 Analyse client requirements to determine project scope, the problem and opportunity faced by the business 1.2 Document client requirements, project scope, related problems and sources of information according to organisational procedures 1.3 Submit documentation to required personnel, seek and respond to feedback according to task requirements
2. Develop high-level alternative scenarios	2.1 Obtain and compare future client requirements with current requirements 2.2 Discuss, develop and document feasible solutions for client requirements

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ELEMENT	PERFORMANCE CRITERIA
	2.3 Determine and document feasibility of each solution 2.4 Identify feasibility alternatives against project constraints
3. Prepare and publish feasibility report	3.1 Develop feasibility report according to organisational policies and procedures and task requirements 3.2 Seek and respond to feasibility report feedback from required personnel 3.3 Obtain final task sign-off on report from required personnel

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Description
Numeracy	• Applies financial modelling skills to identify, analyse and evaluate budgetary information, time durations and human resource allocations
Oral communication	• Uses listening and questioning techniques to articulate complex concepts and requirements using relevant industry language
Reading	• Reads and interprets specifications and other documentation from a variety of sources, and consolidates information to determine client requirements
Writing	• Prepares documentation detailing requirements, scope and solutions to stakeholders using cohesive and instructional language
Teamwork	• Implements strategies for a diverse range of colleagues and clients
Planning and organising	• Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others, including required capabilities, efficiencies and effectiveness
Problem solving	• Investigates new and innovative ideas to continuously improve work practices and processes through consultation and formal and analytical thinking

Unit Mapping Information

Supersedes and is equivalent to ICTSAD401 Develop and present feasibility reports.

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Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAD402 Develop and present ICT feasibility reports

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- Develop a feasibility report for a systems solution.

In the course of the above, the candidate must:

- Identify and confirm the services required
- Identify and propose feasible solutions for the client.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- client business domain, problem and opportunity potential within that environment
- functions and features of a system's functionality
- stakeholders' roles and levels of responsibility in the development of feasibility reports
- industry standard system development methodologies
- feasibility report structure and purpose
- organisational policies and procedures applicable to developing feasibility reports.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- client requirements
- report writing template
- text-editing software

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- client expectations brief
- information on required Information and Communications Technology (ICT) business solutions
- organisational business processes
- budgets for business scenarios
- outcomes of business analysis process.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAD507 Design and implement quality assurance processes for business solutions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to define and implement quality assurance processes and procedures to ensure business solutions achieve quality performance expectations.

It applies to senior Information and Communications Technology (ICT) staff in a range of areas who are required to ensure quality in ICT systems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems analysis and design

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan business quality assurance process	1.1 Determine legislative requirements and organisational quality performance expectations and benchmark standards 1.2 Discuss and develop organisational standards and guidelines for achieving each benchmark according to organisational procedures 1.3 Identify and analyse applicable quality management systems guides and quality management plans 1.4 Document expectations, standards and benchmarks in a quality assurance plan according to organisational documentation procedures

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2. Develop quality policies and plans	2.1 Write quality policy for business directive according to organisational expectations, standards and benchmarks 2.2 Create quality management plan for business solution 2.3 Distribute and communicate quality management plan and procedures to required personnel and obtain feedback 2.4 Analyse feedback and determine if corrective action is required 2.5 Amend quality management plan, as required, and incorporate corrective action 2.6 Establish and document a quality reporting and monitoring plan according to organisational expectations, standards and benchmarks 2.7 Check and document skills of staff and confirm ability to meet quality standards required
3. Implement and control quality assurance processes	3.1 Determine and allocate strategic quality responsibilities and key quality tasks and functions to required personnel according to quality management plan 3.2 Apply quality performance guidelines, procedures and processes according to quality management plan 3.3 Obtain stakeholder feedback and monitor implementation of quality processes 3.4 Monitor quality process performance and report to required personnel according to quality management plan 3.5 Identify and record system breakdowns and create corrective action requests 3.6 Take corrective action and escalate as required according to organisational procedures
4. Improve quality	4.1 Collect, analyse and measure quality performance results against benchmarks and determine if quality standards are being met 4.2 Use corrective action requests and determine frequency of quality breakdowns, whether defects are isolated incidents or require a wider analysis and corrective action 4.3 Discuss and determine corrective actions to be taken with required personnel and assign responsibility for taking action as required 4.4 Implement corrective action solutions and measure performance according to organisational procedures 4.5 Review and adjust benchmark standards as required and improve quality performance 4.6 Document quality performance results and disseminate information to required personnel as necessary 4.7 Review organisational procedures at predetermined schedules as part of a management review process and quality reporting

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	function

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	**Description**
Oral communication	• Uses listening and questioning techniques to articulate complex concepts and requirements using relevant industry language
Reading	• Critically analyses complex documentation from a variety of sources and consolidates information applicable to specific criteria in determining requirements
Writing	• Records information and prepares documentation using required language and organisational standards
Teamwork	• Implements strategies for a diverse range of colleagues and clients and builds rapport and fosters strong relationships
Initiative and enterprise	• Seeks to improve policies and procedures according to organisational goals • Investigates new and innovative ideas to continuously improve work practices and processes through consultation, and formal and analytical thinking
Planning and organising	• Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others, including required capabilities, efficiencies and effectiveness • Monitors progress of plans and schedules, and reviews and changes them to meet new demands and priorities
Problem solving	• Responds intuitively to problems requiring immediate resolution, drawing on past experiences to focus on causes of a problem rather than symptoms
Self-management	• Contributes to roles and responsibilities of self and others • Selects, implements and seeks to improve protocols governing communications to clients and co-workers in a range of work contexts • Elicits feedback and provides feedback to others and improves self and workgroup behaviours
Technology	• Uses and investigates new digital technologies and applications to manage and manipulate data, and communicate with others in a secure and stable digital environment

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Unit Mapping Information

Supersedes and is equivalent to ICTSAD504 Implement quality assurance processes for business solutions.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAD507 Design and implement quality assurance processes for business solutions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- plan and implement at least one quality assurance process for a medium sized business.

In the course of the above, the candidate must:

- construct quality standards that can be measured quantitatively and applied universally
- document quality assurance standards, policies and plans
- monitor and review quality assurance standards and processes
- adhere to legislative and organisational procedures and requirements.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- copyright and intellectual property legislation applicable to Information and Communications Technology (ICT) systems development
- legislative requirements and organisational quality performance expectations and benchmark standards
- industry standard quality management system guides, including quality management plans
- features and systems within business model
- quality assurance and quality management plans of:
  - International Organisation for Standardization (ISO)
  - International Electrotechnical Commission (IEC) standards
  - Australian Standards (AS)
- quality assurance improvement processes
- technical performance measurement techniques
- the structure of quality assurance management plans and included standards

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- organisational procedures applicable to implementing quality assurance processes, including:
  - documentation standards
  - processes of reporting and monitoring quality assurance plans
  - methods and processes of measuring performance.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- industry and organisational quality assurance standards
- data applicable to business model
- required hardware, software and digital devices
- organisational guidelines and procedures applicable to quality standards.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAD508 Develop technical requirements for business solutions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to develop technical and related requirements that will enable business solutions to be implemented in an organisation.

It applies to individuals responsible for performing complex technical analysis to complete a range of tasks and provide solutions to complex problems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems analysis and design

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Research and establish business and business solution requirements	1.1 Identify organisational and legislative requirements, standards and procedures applicable to business solutions 1.2 Define and analyse hardware, software and network requirements of business solution 1.3 Determine business model and technical specifications according to business need 1.4 Establish interface requirements according to needs of end users and external parties 1.5 Determine Information and Communications Technology (ICT) security requirements

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	1.6 Document proposed business solution requirements and obtain approval from required personnel
2. Analyse impact of technical solutions	2.1 Define software solutions required to build business platform according to solution requirements 2.2 Identify processes requiring change by business solution 2.3 Determine impact of changes on value and supply chain 2.4 Research security protocols applicable to business solutions 2.5 Document impact of changes and submit to required personnel
3. Develop and plan implementation of business solutions	3.1 Implement hardware and software solutions for testing purposes according to organisational procedures 3.2 Identify training needs and gaps in personnel skills 3.3 Plan timelines and allocation of resources for business solution 3.4 Develop performance standards and benchmark results 3.5 Determine costs involved to implement business solution 3.6 Document business solution according to organisational procedures
4. Validate and finalise solution	4.1 Test, validate and document results of business solution according to organisational procedures 4.2 Finalise documentation and provide results to required personnel for verification 4.3 Seek feedback from required personnel, and iterate accordingly 4.4 Obtain sign-off on business solution by required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	**Description**
Numeracy	• Performs mathematical calculations and analyses financial information, costs and values in determining cost of implementation

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Skill	Description
Reading	• Critically analyses complex documentation from a variety of sources and consolidates information applicable to specific criteria when determining requirements
Teamwork	• Implements strategies for a diverse range of colleagues and clients and builds rapport and fosters strong relationships
Initiative and enterprise	• Seeks to improve policies and procedures according to organisational goals • Investigates new and innovative ideas as a means to continuously improve work practices and processes through consultation and formal and analytical thinking
Planning and organising	• Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others, including required capabilities, efficiencies and effectiveness • Monitors progress of plans and schedules and reviews and changes them to meet new demands and priorities
Self-management	• Contributes to roles and responsibilities of self and others • Selects, implements and seeks to improve protocols governing communications to clients and co-workers in a range of work contexts
Technology	• Manages and manipulates data and communicates with others in digital environments, by using and investigating new digital technologies and applications

Unit Mapping Information

Supersedes and is equivalent to ICTSAD505 Develop technical requirements for business solutions.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAD508 Develop technical requirements for business solutions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop technical requirements for at least three business solutions.

In the course of the above, the candidate must:

- document internal and external technical environments required
- produce an impact statement of each technical solution above
- evaluate functionality of each business solution above
- comply with organisational procedures.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- business process design
- copyright and intellectual property legislation applicable to Information and Communications Technology (ICT) systems development
- customer and business liaison processes
- technology connectivity implications
- business models and solutions
- corporate strategies which may influence business solutions
- interface requirements of end users
- key policies, procedures and documentation required to develop technical requirements for business solutions, including those related to:
  - business supply chains procedures
  - security protocols
  - time and resource management processes

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  - performance standards and benchmarks
- methods in calculating implementation costs of business solution
- testing and validation processes applicable to business solution
- software solutions used in building business platforms
- organisational and legislative requirements and procedures applicable to business solutions.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- business model
- business requirements and solutions
- customer relationship model
- hardware, software and network requirements
- organisational and legislative requirements
- software solutions
- processes requiring change by business solution
- security protocols applicable to business solutions
- required tools, equipment, materials and industry standard software packages.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAD509 Produce ICT feasibility reports

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to recommend the preferred scenario from a range of feasible options offered and produce a feasibility report to the client.

It applies to individuals responsible for researching, planning and designing solutions for complex Information and Communications Technology (ICT) projects.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems analysis and design

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Confirm client requirements	1.1 Discuss and confirm client requirements with required personnel 1.2 Determine project scope, purpose, problem context and opportunity faced by business 1.3 Identify legislative requirements and organisational standards and guidelines applicable to project scope and task 1.4 Document and review client requirements, project scope, problems and sources of information according to organisational procedures 1.5 Confirm requirements and scope with client and required personnel
2. Examine and review	2.1 Confirm future client requirements

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alternatives	2.2 Discuss and research feasible solutions according to client requirements 2.3 Confirm feasibility of each solution has been assessed, including constraints and risks 2.4 Document feasible solutions discussed according to organisational procedures
3. Prepare and publish feasibility report	3.1 Discuss and establish structure and components of feasibility report with required personnel 3.2 Prepare draft feasibility report according to organisational procedures and client requirements 3.3 Confirm completed feasibility report covers client requirements, project scope and analysis of alternative scenarios 3.4 Seek feedback and confirm recommendation of preferred scenario with required personnel 3.5 Amend feasibility report according to feedback as required and finalise documentation 3.6 Present feasibility report to required personnel and seek project approval

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Oral communication	• Uses listening and questioning techniques to determine client requirements and feedback and articulate ideas using specific language applicable to audience
Reading	• Critically analyses complex documentation from a variety of sources and consolidates information applicable to specific criteria when determining requirements
Initiative and enterprise	• Selects, implements and seeks to improve protocols governing communications to clients and co-workers in a range of work contexts • Investigates new and innovative ideas to continuously improve work practices and processes through consultation, and formal and analytical thinking
Planning and organising	• Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others, including required capabilities, efficiencies and effectiveness • Monitors progress of plans and schedules, and reviews and changes them to meet new demands and priorities

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SKILL	DESCRIPTION
Self-management	• Identifies diversity in people and manages this diversity to improve workplace relations and practices

Unit Mapping Information

Supersedes and is equivalent to ICTSAD506 Produce a feasibility report.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAD509 Produce ICT feasibility reports

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- produce a moderately complex feasibility report according to client requirements.

In the course of the above, the candidate must:

- review documentation and confirm client requirements for project
- document at least three different alternative business solutions
- comply with legislative and organisational requirements
- obtain project sign-off from required personnel.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- the client business domain and client requirements
- legislative requirements applicable to project scope
- key organisational standards, guidelines, procedures and documentation required to produce feasibility reports
- the role of stakeholders and degree of stakeholder involvement in developing a feasibility report
- the system’s functionality and improvement options.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

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- client requirements
- report writing template
- information on a range of Information and Communications Technology (ICT) business solutions
- future organisational business processes
- budgets for scenarios
- outcomes of business analysis process
- financial modelling
- business context
- required tools, equipment, materials, hardware and industry software packages.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAD608 Perform ICT-focused enterprise analysis

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to provide an enterprise analysis and determine possible Information and Communications Technology (ICT) solutions available for a given initiative or for long-term planning.

It applies to individuals who combine high-level management, business and technical skills required to manage complex analysis efforts within the ICT industry.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems analysis and design

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Define business need	1.1 Identify and analyse business goals and objectives and link to measures 1.2 Analyse business processes, model and strategies and applicable organisational policies and guidelines 1.3 Identify and investigate issues and determine business problems and opportunities according to organisational requirements 1.4 Discuss consequences of business problems to organisation with required personnel 1.5 Identify and discuss applicable ICT solutions to business problem and speed of implementing solution 1.6 Determine desired outcomes of proposed solutions

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	1.7 Document research outcomes including business problems and potential solutions
2. Assess capability gaps	2.1 Determine existing capabilities of organisation and relate to desired objectives and outcomes 2.2 Identify capabilities required to achieve the desired future state and assess gaps 2.3 Test assumptions and use results in decision making process 2.4 Document identified capability gaps according to organisational requirements
3. Determine solution approach	3.1 Discuss identified ICT solutions and applicability to business objectives 3.2 Generate assumptions and identify constraints and risks which may affect choice of solutions, according to organisational procedures 3.3 Identify processes, tools and software required in implementing proposed solutions 3.4 Assess and rank solution approaches and select applicable solutions
4. Define solution scope	4.1 Determine solution scope in terms of major features and functions to be included 4.2 Explain implementation approach and how chosen solution will deliver solution scope to required personnel 4.3 Identify and analyse major business and technical dependencies 4.4 Document determined solution approach and scope according to organisational requirements
5. Define business case and finalise process	5.1 Identify benefits of recommended solution in terms of both qualitative and quantitative gains to organisation 5.2 Estimate total net cost of solution 5.3 Perform initial risk assessment 5.4 Agree how identified costs and benefits will be assessed and evaluated 5.5 Finalise documentation and seek feedback from required personnel 5.6 Amend accordingly, and obtain sign-off from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

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SKILL	DESCRIPTION
Numeracy	• Interprets complex financial information and performs calculations in estimating costs, using highly developed numeracy skills
Oral communication	• Uses listening and questioning techniques to articulate complex concepts and requirements using industry language
Reading	• Critically analyses complex documentation from a variety of sources and consolidates information applicable to specific criteria when determining requirements
Writing	• Prepares documentation analysing requirements and expressing ideas and solution scope in a logical and succinct manner
Initiative and enterprise	• Explores and incubates new and innovative ideas through unconstrained analysis and critical thinking when developing and improving organisational goals
Planning and organising	• Plans strategic priorities and outcomes in a diverse environment exposed to competing demands
Problem solving	• Identifies key factors impacting decisions and their outcomes, drawing on experience, competing priorities and decision-making strategies where required
Self-management	• Works autonomously, making high-level decisions to achieve and improve organisational goals • Takes a lead role in development of organisational goals, roles and responsibilities • Develops and implements strategies and confirms organisational policies, procedures and regulatory requirements are met • Gathers and analyses data, and seeks feedback

Unit Mapping Information

Supersedes and is equivalent to ICTSAD601 Perform ICT-focused enterprise analysis.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAD608 Perform ICT-focused enterprise analysis

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- perform an ICT-focused enterprise analysis for an organisation.

In the course of the above, the candidate must:

- examine business situation in detail and document a business case for a proposed solution that addresses:
  - business need
  - required capabilities
  - solution scope
  - risk assessment
  - cost estimates
  - most feasible approach.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- business analysis processes, procedures and techniques
- business problems and opportunities, processes, models and strategies
- key organisational policies, procedures and documentation required to perform ICT focused enterprise analysis, including those related to:
  - assumption testing processes
  - organisational capabilities
- market trends and best practices in identifying business opportunities
- constraints and risks in implementing solutions
- solution implementation approaches

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- methods of calculating qualitative and quantitative benefits of ICT solutions
- technology solution patterns.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- applicable organisational policies and guidelines
- information applicable to organisational goals, objectives, processes, model and strategies
- business analysis practices and tools
- reports and plans prepared for projects
- required hardware, software and its components.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAD609 Plan and monitor business analysis activities in an ICT environment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to establish and manage Information and Communications Technology (ICT) business analysis activities in a medium-to-large organisation.

This unit applies to individuals who require high-level management, business and technical skills to manage complex analysis efforts within the Information and Communications Technology (ICT) industry, often as part of business-critical ICT projects.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems analysis and design

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan business analysis approach	1.1 Identify business analysis initiative and establish applicable organisational process needs and objectives 1.2 Review organisational and legislative requirements, including standards, guidelines and processes applicable to initiative 1.3 Define process requirements of business analysis initiative, according to organisational requirements 1.4 Tailor approach to needs of specific business analysis initiative, according to organisational standards

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ELEMENT	PERFORMANCE CRITERIA
	1.5 Engage with required personnel and determine how work will be completed 1.6 Plan execution of business analysis activities according to organisational requirements
2. Conduct stakeholder analysis	2.1 Identify stakeholders who may be affected by business need or new solution 2.2 Assess stakeholder attitudes toward and influence over initiative 2.3 Decide which stakeholders will have authority over business analysis activities 2.4 Instigate regular reviews and identify new stakeholders and changed positions as business needs evolve
3. Plan business analysis activities and communication	3.1 Discuss and establish type of project or initiative and business analysis deliverables 3.2 Determine scope of work in business analysis activities 3.3 Establish and approve which activities the business analyst will perform and when 3.4 Develop estimates for business analysis work 3.5 Determine methods to receive, distribute, access, update and escalate information from project stakeholders 3.6 Decide how best to communicate with each stakeholder according to stakeholder needs and constraints to communication
4. Plan requirements management process	4.1 Establish a requirements repository for storing requirements, including those under development, under review, and approved requirements 4.2 Assess need and process for requirements traceability based on applicable factors 4.3 Conclude which requirements attributes will be captured 4.4 Determine requirements change management process

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ELEMENT	PERFORMANCE CRITERIA
5. Manage business analysis performance	5.1 Determine which metrics will be used when measuring work performed by business analyst 5.2 Report performance in required format according to project needs 5.3 Assess performance measures and determine where problems may be occurring in executing business analysis activities 5.4 Identify and recommend preventative or corrective actions as required 5.5 Confirm and review business analysis performance and recommended actions with required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Performs mathematical calculations and analyses financial information, costs and values when determining estimates
Oral communication	• Determines and confirms stakeholder requirements, using collaborative techniques, including active listening and questioning • Selects and implements communications systems, processes and practices with internal and external stakeholders to communicate information and build rapport
Reading	• Critically analyses complex documentation from a variety of sources and consolidates information applicable to specific criteria when determining requirements
Writing	• Prepares documentation expressing ideas, exploring complex issues using succinct language and logical structure
Planning and organising	• Plans strategic priorities and outcomes within a flexible, efficient and effective context, in a diverse environment exposed to competing demands
Problem solving	• Identifies key factors impacting decisions and their outcomes, drawing on experience, competing priorities and decision-making strategies where applicable
Self-management	• Works autonomously, making high-level decisions to achieve and improve organisational goals • Takes a lead role in development of organisational goals, roles and responsibilities

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SKILL	DESCRIPTION
	• Gathers and analyses data and seeks feedback

Unit Mapping Information

Supersedes and is equivalent to ICTSAD603 Plan and monitor business analysis activities in an ICT environment.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAD609 Plan and monitor business analysis activities in an ICT environment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- plan and monitor at least two different business analysis activities, including determining an approach and required processes.

In the course of the above, the candidate must:

- determine business analysis deliverables, tasks and estimates
- plan business analysis communications
- comply with organisational and legislative requirements.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- business analysis process, procedures and techniques
- project management process, procedures and techniques
- risk management strategies
- technology solution patterns
- stakeholder management techniques and processes
- communication constraints that may impact on stakeholders
- requirements management processes, procedures and techniques
- metrics used in measuring business analysis performance
- organisational and legislative requirements and procedures applicable to business analysis activities.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- required tools, equipment and materials
- business requirements documentation and information
- industry software packages
- required hardware and its components
- file storage.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTSAD610 Analyse stakeholder requirements

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to analyse stated requirements, determine potential solutions, and define features available to meet stakeholder ICT needs.

This unit applies to individuals who require high-level management, business and technical skills necessary to manage complex analysis efforts within the information and communications technology (ICT) industry, often as part of business-critical ICT projects.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems analysis and design

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and organise requirements	1.1 Determine basis for prioritisation of requirements 1.2 Resolve challenges in facilitating prioritisation according to organisational requirements 1.3 Obtain and articulate stakeholder requirements according to organisational polices and guidelines 1.4 Prioritise stakeholder requirements according to established procedures 1.5 Discuss potential solutions to address stakeholder needs with required personnel 1.6 Develop models required in describing solution scope according to informational needs of stakeholders

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ELEMENT	PERFORMANCE CRITERIA
	1.7 Document dependencies and inter-relationships among requirements
2. Specify and model requirements	2.1 Develop and document textual requirements according to organisational requirements 2.2 Generate matrices, and convey and support identified requirements 2.3 Create models and communicate requirements and improvement opportunities to required personnel
3. Define assumptions and constraints	3.1 Agree on assumptions to be defined and clarified according to requirements 3.2 Document and examine business constraints and identify options no longer available 3.3 Identify and examine technical constraints which may restrict design or mandate standards to be followed
4. Verify and validate requirements	4.1 Discuss and establish characteristics of requirements' quality 4.2 Undertake verification activities iteratively throughout requirements analysis process 4.3 Identify risks and threats arising from stakeholder requirements, and manage them accordingly 4.4 Identify and define stakeholder requirement benefit assumptions and manage associated risks 4.5 Create measurable evaluation criteria and assess requirements benefit post implementation 4.6 Assign business value of requirements and identify candidates for elimination 4.7 Determine requirement dependencies for benefits realisation 4.8 Evaluate alignment with business case and opportunity cost 4.9 Document and record research and findings applicable to stakeholder requirements

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Performs mathematical calculations and interprets and manipulates complex numerical information
Oral communication	• Presents complex information in formal situations, using required language, tone and pace applicable to audience and purpose • Uses a variety of communication tools, processes and strategies in building and maintaining working relationships
Reading	• Critically analyses complex documentation from a variety of sources and consolidates information applicable to specific criteria when determining requirements
Writing	• Prepares documentation expressing ideas, exploring complex issues using succinct language and logical structure • Documents outcomes and changes to discussions, using industry terminology
Initiative and enterprise	• Explores and incubates new and innovative ideas through unconstrained analysis and critical thinking when developing and improving organisation's goals
Planning and organising	• Plans strategic priorities and outcomes within a flexible, efficient and effective context in a diverse environment exposed to competing demands
Problem solving	• Identifies key factors impacting decisions and their outcomes, drawing on experience, competing priorities, and decision-making strategies where required
Self-management	• Develops and implements strategies and confirms organisational policies, procedures and regulatory requirements are being met • Gathers and analyses data and seeks feedback

Unit Mapping Information

Supersedes and is equivalent to ICTSAD606 Analyse stakeholder requirements.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAD610 Analyse stakeholder requirements

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- define, specify and prioritise at least three different stakeholder requirements and solutions.

In the course of the above, the candidate must:

- create a model for each stakeholder requirement and solution
- document textual requirements for each stakeholder requirement and solution
- comply with stakeholder and organisational requirements.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- business rules analysis
- data flow diagramming
- data, organisation and process modelling, and applicable business and technical constraints
- functional decomposition
- key policies, procedures and documentation required to analyse stakeholder requirements
- risk management strategies for a range of stakeholder requirements
- potential solutions to a range of stakeholder requirements
- model creation procedures
- assumptions applicable to stakeholder requirements
- business and technical constraints
- verification procedures
- purpose of using scenarios, stories and case studies

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- scope modelling.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- required policies and legislation
- business analysis practices and tools
- required hardware, equipment and materials
- industry software packages
- stakeholder requirements
- reports and plans prepared for projects
- a portfolio of projects to be undertaken.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAD611 Manage assessment and validation of ICT solutions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to determine the most applicable information and communications technology (ICT) solution and facilitate its implementation.

This unit applies to individuals who are required to assess and validate business processes, organisational structures, outsourcing agreements, software applications, and any other component of the solution to ensure that the overall solution delivers maximum value to stakeholders.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems analysis and design

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Assess proposed solutions according to stakeholder requirements	1.1 Identify and analyse solution options and additional capabilities, and confirm they meet stakeholder requirements 1.2 Rank solution options on business value, and advantages and disadvantages of alternatives 1.3 Allocate requirements to solution components and maximise business value 1.4 Facilitate allocation of requirements to specific project release, phase or iteration

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ELEMENT	PERFORMANCE CRITERIA
2. Assess organisational readiness	2.1 Conduct cultural, operational and technical assessment 2.2 Perform stakeholder impact analysis 2.3 Document assessment of proposed solution
3. Define transition requirements	3.1 Evaluate old system actual data and metadata 3.2 Develop options for managing ongoing work during transition to the new solution 3.3 Participate in organisational change management recommendations and processes as required
4. Validate solution and evaluate solution performance	4.1 Investigate defective solution outputs according to organisational evaluation and valuation procedures 4.2 Identify and assess defects and issues, and discuss potential actions with required personnel 4.3 Realise value delivered by solution 4.4 Develop and validate solution metrics 4.5 Decide solution replacement or elimination 4.6 Document work performed and confirm decision with required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Oral communication	• Uses a variety of communication tools, processes and strategies in building and maintaining working relationships
Reading	• Critically analyses complex documentation from a variety of sources and consolidates information applicable to specific criteria when determining requirements
Writing	• Prepares documentation expressing ideas, exploring complex issues using succinct language and logical structure
Initiative and enterprise	• Explores and incubates new and innovative ideas through unconstrained analysis and critical thinking when developing and improving organisation’s goals
Planning and organising	• Plans strategic priorities and outcomes within a flexible, efficient and effective context, in a diverse environment exposed to competing demands

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SKILL	DESCRIPTION
Problem solving	• Addresses complex problems involving multiple variables, using formal analytical, lateral thinking techniques, experience and knowledge when focusing on root cause
Self-management	• Takes a lead role in the development of organisational goals, roles and responsibilities • Monitors and reviews organisation's policies, procedures and adherence to requirements when implementing and managing change • Identifies diversity and seeks to integrate diversity into work context, for managing change, making decisions and achieving shared outcomes • Gathers and analyses data and seeks feedback

Unit Mapping Information

Supersedes and is equivalent to ICTSAD607 Manage assessment and validation of ICT solutions.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAD611 Manage assessment and validation of ICT solutions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- assess and validate at least three different proposed ICT solutions according to stakeholder requirements.

In the course of the above, the candidate must:

- compare and assess transition requirements between different solutions
- analyse output variances between at least three solutions
- recommend solutions in priority order
- confirm solution metrics and evaluate solutions
- document work performed in assessing and validating solutions.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- the business environment impacts from proposed Information and Communications Technology (ICT) solutions
- techniques used in assessing organisational readiness, including:
  - focus groups, interviews and surveys
  - risk analysis
  - SWOT analysis
  - problem tracking
- techniques for assessing options and validating solutions
- organisational change management processes
- the principles of solution performance metrics
- key policies and documentation required to assess and validate ICT solutions

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- organisational procedures applicable to assessment and validation of ICT solutions.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- required policies and legislation
- business analysis practices and tools
- industry software packages
- required hardware, equipment and its components
- reports and plans prepared for projects including proposed solutions
- portfolio of project work to be undertaken including stakeholder requirements.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAD612 Implement and maintain uses of containerisation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to build, deploy, run, and monitor containers, and implement micro services, with the goal of providing a more sustainable, flexible and cost-efficient Information and Communications Technology (ICT) environment.

The unit applies to those working as senior computer systems architects proficient in software development, senior software developers and those who work in DevOps roles, responsible for increasing the resource utilisation of an organisation by using containerisation as an alternative to traditional server and application infrastructure technologies. Containers are used to isolate the runtime environment for applications in order to increase portability and reduce operational costs by increasing the utilisation of resources.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems analysis and design

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Assess containerisation needs for application	1.1 Research and select vendor containerisation technology according to business needs 1.2 Obtain and review technical specifications, infrastructure and systems requirements for container service and runtime 1.3 Assess responsibility and requirements of microservice architecture according to business needs 1.4 Check and confirm installation of runtime environment for

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ELEMENT	PERFORMANCE CRITERIA
	containerisation technology
2. Implement containers	2.1 Review and select base container image according to business needs 2.2 Author container image file for defining base image, working directory, application code, environment configuration and commands 2.3 Determine container image name applying industry standards and conventions 2.4 Build container image from authored file 2.5 Run a new instance of container from image 2.6 Confirm connectivity of published ports for running container instance 2.7 Test, debug and fix the running instance of containerised application 2.8 Run additional container instances from image 2.9 Stop running container instances
3. Manage container image	3.1 Review available options and select container image registry according to business needs 3.2 Create container image repository 3.3 Authenticate and connect to registry 3.4 Push container image to repository 3.5 Update, version and push container image to repository 3.6 Pull container image from repository
4. Maintain container services	4.1 Access logging for application and container 4.2 List containers in runtime environment 4.3 List container port mappings 4.4 Remove container from runtime environment 4.5 Monitor and display container resource usage and statistics 4.6 Update configuration of container according to business needs

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION

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SKILL	DESCRIPTION
Numeracy	• Designs complex algorithms • Selects from, and flexibly applies, a wide range of mathematical and problem-solving strategies, techniques, and principles when solving equations, constructing and reading flow charts and analysing data
Oral communication	• Uses listening and questioning skills to confirm understanding of requirements and participates in verbal exchanges of feedback resolution, ideas and solutions
Reading	• Critically analyses documentation, instructions and data from a variety of sources and records, and consolidates information, in order to determine requirements and steps forwards • Identifies and interprets technical material to determine and confirm job, business and systems requirements
Writing	• Demonstrates sophisticated writing skills using specialised language, technical language and scripts and required conventions
Teamwork	• Elicits feedback and provides feedback to others, in order to improve self or workgroup behaviours
Planning and organising	• Researches, plans and sequences complex tasks, efficiently and effectively
Problem solving	• Applies systematic and analytical decision- making processes for complex and non-routine situations and bug code • Uses nuanced understanding of context to recognise anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise in containers as well as in projects and wider systems
Self-management	• Takes full responsibility for following policies, procedures and legislative requirements, and identifies organisational implications of new legislation or regulation, including privacy and data use legislation • Monitors progress of plans and schedules, and reviews and changes them, to meet new demands and priorities • Investigates new and innovative ideas, as a means by which to continuously improve, work practices and processes through consultation, formal and analytical thinking
Technology	• Uses complex scripts and tools required within complex systems, applications, operation systems, the internet and required software and hardware components • Uses complex cyber security procedures and techniques to maintain data security, and systems and application integrity

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Unit Mapping Information

No equivalent unit. New unit.

Links

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Assessment Requirements for ICTSAD612 Implement and maintain uses of containerisation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- author at least two files for building container images
- run, test and debug a minimum of two running containers instances
- install and run at least one application within container
- monitor a minimum of two container instance in container runtime
- author, build and run container instances from at least one image with two different versions
- set up container image repository in registry and perform push and pull commands at least once.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- features and functions of operating systems
- continuous integration and continuous delivery/deployment methodology, processes and principles
- network protocols including:
  - network communications protocol
  - TCP/IP (transmission control)
- tools and features of registries, command line interface and text editor
- advanced programming language
- organisational policies and procedures for:
  - documenting work and technical requirements
  - evaluating business processes of uses of containerisation
- stages of software development life cycle (SDLC)
- procedures for implementing container services

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- basic principles of:
  - computer hardware, networking, operating system, applications, database management systems, cloud solutions and components
  - IT service management systems (ITMS)
  - required programming language, including data serialisation language
  - open-source development tools
- processes for establishing and implementing business requirements for container services
- key functions and features of data flow charts
- methods for monitoring container services, including:
  - manually monitoring services
  - different organisational levels of responsibility relating to application functions.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- the internet, including connectivity
- text editor
- required hardware, software and applications
- vendor products relating to containerisation technology
- containerisation service.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAD613 Install and configure container orchestration services

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to install and set up orchestration services to manage the lifecycle of containers in large dynamic environments, using platforms for running multiple containers in production.

The unit applies to those working as senior computer systems architects, senior system administrators and those who work in DevOps roles, and responsible for installing, running and coordinating containerised applications, to provide flexible, scalable, predictable, available and sustainable services.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish and set up container orchestration services (COS)	1.1 Assess business specifications, application and business needs for container orchestration services (COS) with required personnel 1.2 Obtain and review infrastructure requirements and technical specifications for using container technologies according to business needs 1.3 Research and select suitable vendor (COS) software according to business needs 1.4 Install COS on host computer or virtual machine

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	1.5 Add host computers/virtual machines/nodes using COS 1.6 Select and promote node to manage and host all nodes 1.7 Set up and confirm group of nodes run as required
2. Configure containers	2.1 Add different types of images/containers to the service 2.2 Name and move containers as required 2.3 Create pod/swarm and run container in pod 2.4 Configure scaling policy according to business need 2.5 Use instrumentation to configure scaling in and out according to business needs 2.6 Test and confirm container set up, function of containers and required resources 2.7 Finalise and create user documentation according to business needs
3. Test and maintain container service	3.1 Configure load tester to port 3.2 Register containers to central point 3.3 Use load balancer to retrieve container requests 3.4 Test requests and ensure load testing works as required
4. Manage containers according to business need	4.1 Experiment with different volumes of traffic to sites 4.2 Monitor and record metrics 4.3 Add and delete containers as required according to CPU, RAM, network traffic readings and business need 4.4 Set up container trigger alarms according to metrics and business needs 4.5 Create user documentation according to business need 4.6 Report metrics and business impact with required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Critically analyses documentation, instructions and data from a variety of sources and records, and consolidates information, in order to determine requirements and steps forwards • Identifies and interprets technical material to determine and confirm job, business and systems requirements
Writing	• Demonstrates sophisticated writing skills using specialised language, technical language and scripts and required conventions to create

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SKILL	DESCRIPTION
	workplace documents
Planning and organising	• Researches, plans and sequences complex tasks, efficiently and effectively
Problem solving	• Applies systematic and analytical decision- making processes for complex and non-routine situations and bug code • Uses nuanced understanding of context to recognise anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise in containers as well as in projects and wider systems
Self-management	• Monitors progress of plans and schedules, and reviews and changes them, to meet new demands and priorities • Investigates new and innovative ideas, as a means by which to continuously improve, work practices and processes through consultation, formal and analytical thinking
Technology	• Uses complex scripts and tools required within complex systems, applications, operation systems, the internet and required software and hardware components • Uses cyber security procedures and techniques to maintain data security, and systems and application integrity

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAD613 Install and configure container orchestration services

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- configure container orchestration services on at least two host computers or virtual machines
- create and manage at least two containers using at least three different metrics to measure requests and traffic data.

In the course of the above, the candidate must:

- confirm clusters scale out and in required by demand changes and business needs
- document work.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- features and functions of operating systems
- continuous integration and continuous delivery/deployment methodology, processes and principles
- network protocols including:
  - network communications protocol
  - TCP/IP (transmission control)
  - internet protocol
- tools and features of registries, command line interface and text editor
- software development life cycle (SDLC)
- basic principles of container orchestration services:
  - pods/swarms
  - nodes

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  - services
  - virtual machines and containers
  - container dependencies
- basic principles of:
  - computer hardware, networking, operating system, database management systems, cloud solutions and components
  - applications
  - database-management systems
  - open-source development tools
  - HTTP
- organisational business needs relating to the use and deployment of containers, including cost constraints
- data flow charts applicable to installing and configuring container orchestration services
- data and metrics of user traffic to sites and applications, including:
  - RAM (random access memory)
  - CPU
  - Network traffic
- different methods of monitoring services, including:
  - manually
  - different organisational levels of responsibility relating to application functions.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- the internet, including connectivity
- required hardware, software and applications
- vendor products relating to containerisation technology
- container orchestration service
- load testing application
- text editor
- user command interface (command prompt).

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS210 Update and maintain hardware, software and documentation inventories

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.
Release 2	Correcting an error in the Application.

Application

This unit describes the skills and knowledge required to update, store and record details of hardware, software and technical documentation within an inventory management software program.

It applies to frontline technical support personnel who work under supervision to maintain hardware, software and documentation in a small to large office environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Update hardware, software and documentation inventories	1.1 Access hardware, software and documentation inventories according to organisational procedures 1.2 Update hardware, software and documentation inventories according to organisational procedures 1.3 Update software licenses and upgrade software according to organisational procedures 1.4 Record and organise documentation storage
2. Maintain hardware,	2.1 Examine and perform maintenance on hardware, software and

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ELEMENT	PERFORMANCE CRITERIA
software and documentation inventories	documentation inventories according to organisational procedures 2.2 Document maintenance procedures performed according to organisational procedures 2.3 Store technical documentation according to organisational policies and procedures 2.4 Access and disseminate technical documentation as required
3. Finalise inventory maintenance activities	3.1 Record maintenance activities according to organisational procedures 3.2 Store hardware, software and equipment that is not in use, according to technical manuals 3.3 Escalate maintenance problems to required personnel according to organisational procedures 3.4 Report completion of maintenance activities to required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Accesses and interprets textual information from a range of sources to record, manage and maintain information
Writing	• Accurately records and completes documentation according to organisational formats and procedures
Oral Communication	• Participates in verbal exchanges of basic ideas that elicit views, opinions and feedback from others
Planning and organising	• Interprets roles and responsibilities for task and makes basic decisions on work completion parameters • Plans and implements routine tasks and workload, making limited decisions on sequencing, timing and collaboration and seeking assistance in setting priorities
Technology	• Interprets the purpose and operates the specific functions and key features of common digital systems and tools to complete routine tasks

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Unit Mapping Information

Supersedes and is equivalent to ICTSAS201 Maintain inventories for equipment, software and documentation.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS210 Update and maintain hardware, software and documentation inventories

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.
Release 2	Correcting an error in the Application.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- update and maintain at least one of each hardware and software inventories according to identified storage and retrieval policy and organisational procedures
- update and maintain at least two documentation inventories according to identified storage and retrieval policy and organisational procedures, including:
  - user documentation
  - technical manuals
- create a profile and description for hardware inventories.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- organisational procedures including:
  - hardware, software and documentation inventory access
  - hardware, software and documentation inventory updates
  - software licenses and software upgrades
  - hardware, software and documentation inventory maintenance
  - maintenance documentation and recording
  - escalation procedures
- technical documentation processes
- software licensing requirements
- inventory principles and procedures.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- hardware, equipment and materials
- industry and inventory management software packages
- organisational documentation
- enterprise intranet
- required person for escalation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS211 Develop solutions for basic ICT malfunctions and problems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to apply problem-solving techniques to determine the origin of basic Information and Communications Technology (ICT) malfunctions and problems and develop solutions for their resolution.

It applies to those who work under supervision within ICT environments to provide frontline technical support, diagnose technical problems and determine potential solutions.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify nature and scope of basic ICT malfunctions and problems	1.1 Access and gather information on malfunction and problem according to organisational procedures 1.2 Determine the malfunction according to task requirements 1.3 Investigate current condition of malfunction and problem 1.4 Escalate malfunction when outside scope of own role according to organisational procedures 1.5 Document and confirm work with required personnel
2. Research and determine solutions	2.1 Research potential solutions for identified malfunction 2.2 Develop and determine recommendations for potential

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ELEMENT	PERFORMANCE CRITERIA
	solutions 2.3 Document and submit proposed solution to required personnel according to organisational procedures
3. Prepare to implement solutions	3.1 Obtain approval for solution implementation 3.2 Plan implementation of chosen solution 3.3 Plan evaluation of implemented solution 3.4 Document solution plan and submit to required personnel according to organisational procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria

SKILL	DESCRIPTION
Reading	• Interprets familiar textual information from a range of sources to identify misleading information, compare technical specifications, and identify solutions to new and emerging issues
Writing	• Accurately records and completes documentation according to organisational formats and procedures
Teamwork	• Takes steps to collaborate with others using accepted communication practices and protocols
Planning and organising	• Efficiently plans and implements routine tasks • Identifies roles and responsibilities for task and makes basic decisions on work completion parameters
Problem solving	• Initiates standard diagnostic procedures when responding to familiar and unfamiliar problems within immediate context, and seeks input from others when problems remain unresolved
Technology	• Interprets the purposes, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine tasks

Unit Mapping Information

Supersedes and is equivalent to ICTSAS202 Apply problem-solving techniques to routine ICT malfunctions.

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Assessment Requirements for ICTSAS211 Develop solutions for basic ICT malfunctions and problems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify at least one basic hardware or software malfunction and at least one user or procedural ICT problem
- develop and document potential solutions to each of the above.

In the course of the above, the candidate must:

- refer unresolved problems to required support personnel
- apply problem-solving techniques to determine the origin of ICT problems.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- organisational procedures regarding:
  - accessing malfunctioning hardware, software, user or procedural malfunctions
  - Work Health and Safety (WHS) requirements for hardware and equipment use
- required industry hardware and software products and services
- required industry maintenance, service and helpdesk practices, processes and procedures
- operating systems used within the ICT industry
- required industry standard diagnostic tools
- computer malfunctions and resolutions
- basic industry documentation practices and procedures
- problem solving techniques that may be used in the development of solutions for basic ICT malfunctions and problems.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- hardware and software with ICT malfunctions
- ICT problems relating to users or systems
- organisational procedures
- digital device with internet connectivity and required browsers.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS212 Record the requirements of client support requests

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to record, prioritise and escalate client support requests, using the required record-keeping and documentation practices.

It applies to those who provide frontline technical client support in small or large office environments. In this context, the individual is not expected to resolve the client support requests.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Log support requests	1.1 Obtain client support request according to organisational procedures 1.2 Document support request requirements and characteristics according to organisational procedures and client needs 1.3 Review client support history and details 1.4 Confirm request with client
2. Prioritise and progress support requests	2.1 Identify guidelines for prioritising and rating client requests according to business scheduling requirements 2.2 Determine the prioritisation, rating and timeframe of client request 2.3 Process client request according to business scheduling

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ELEMENT	PERFORMANCE CRITERIA
	requirements 2.4 Escalate requests to required personnel or department for action
3. Record support request outcome and seek feedback	3.1 Document support request outcome according to organisational procedures 3.2 Seek client satisfaction and request process feedback from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Interprets familiar textual information from a range of sources to identify and review practices and determine that standards have been maintained
Writing	• Accurately records and completes documentation according to organisational formats and procedures
Teamwork	• Identifies and takes steps to follow accepted communication practices and protocols
Planning and organising	• Understands roles and responsibilities for task and makes basic decisions, within familiar situations, on work completion parameters in accordance with organisational standards • Plans and implements routine tasks
Technology	• Interprets the purposes, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine tasks

Unit Mapping Information

Supersedes and is equivalent to ICTSAS204 Record client support requirements.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS212 Record the requirements of client support requests

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- record, prioritise and escalate at least two client support requests from at least two different clients.

In the course of the above, the candidate must:

- log support requests resulting from tickets, phone calls, emails, video calls, automated requests or direct messages
- determine time sensitivity and importance of requests against business or client needs
- refer client support requests in line with business scheduling requirements
- follow up support request progression and client satisfaction.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- organisational procedures for:
  - obtaining and documenting client support request
  - guidelines for prioritising and rating client requests
  - escalation processes and procedures
  - logging procedures
  - prioritising client requests
- frontline client support software, hardware diagnostic tools and maintenance procedures
- business scheduling requirements
- responsibilities of frontline technical client support
- business documentation and record-keeping practices.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- equipment, software and tools required to process and document requests
- client support requests and required documentation
- client support history records
- organisational policy and procedures for:
  - critical cases and escalation processes and procedures
  - escalation procedures
  - logging procedures
  - prioritising client requests.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS213 Maintain the integrity of ICT systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to backup, protect and secure stand-alone and networked client server environments.

It applies to technical support individuals who are required to uphold workflow and quality processes in a small or large office environment through the maintenance of Information and Communications Technology (ICT) systems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to test ICT system integrity	1.1 Determine restoration and back up schedule according to organisational procedures 1.2 Identify and confirm storage and backup destination with required personnel 1.3 Perform backup according to task requirements 1.4 Label and store backups according to organisational procedures and backup schedule 1.5 Update system with virus protection and scanning software according to cyber security procedures 1.6 Identify copyright and privacy legislation for licensed software and work

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ELEMENT	PERFORMANCE CRITERIA
2. Conduct ICT system testing and backup procedures	2.1 Test restoration procedures according to organisational procedures 2.2 Restore data under instruction from required personnel 2.3 Carry out virus scanning and report detected viruses to required personnel 2.4 Remove viruses and malware according to organisational procedures and within scope of own role 2.5 Check hardware devices and networks for operating condition and performance
3. Finalise and record current state of ICT systems	3.1 Document and report backup results 3.2 Maintain records of backups, file names, licence numbers and their location 3.3 Report licensing anomalies related to software to required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Interprets familiar textual information from a range of sources to identify and review practices and determine that standards have been maintained • Researches and interprets information to identify, monitor and evaluate technical information and maintain standards
Writing	• Accurately records and completes documentation according to organisational formats and procedures
Teamwork	• Identifies and takes steps to follow accepted communication practices and protocols
Planning and organising	• Plans and implements routine tasks
Problem solving	• Makes low-impact decisions within familiar situations, based on a range of predefined or routine solutions, and evaluates the effectiveness of the outcome
Self-management	• Identifies roles and responsibilities for task and makes basic decisions on work completion parameters in accordance with organisational standards
Technology	• Identifies the purposes, specific functions and key features of

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	common digital systems and tools, and operates them effectively to complete routine tasks

Unit Mapping Information

Supersedes and is equivalent to ICTSAS205 Maintain ICT system integrity.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS213 Maintain the integrity of ICT systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- backup, protect and secure at least two client server environments.

In the course of the above, the candidate must:

- review organisational backup schedule
- follow system maintenance procedures
- create, restore, label, delete, archive and report file backups
- check hardware and networks for compliance with licensing requirements
- report data security, privacy, copyright and licensing compliance anomalies
- perform virus protection and scanning software updates.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- organisational procedures for:
  - backups, restoration and testing procedures and operations
  - file name conventions and storage of backups
  - malware and virus scans
  - copyright and privacy legislation
  - inventory and maintenance procedures
- industry accepted hardware and software products
- virus protection methods
- diagnostic tools that may be used in maintaining the integrity of ICT systems
- storage and retrieval guidelines
- system performance metrics and system performance testing tools

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- legislation relating to restoration procedures, copyright, privacy and General Public Licence (GPL).

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- stand-alone and networked client server environments
- hardware containing information and data
- antivirus and scanning software
- technical records and documentation
- copyright, GPL and privacy legislation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS214 Protect devices from spam and destructive software

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to reduce the risk of a device's operation being affected by spam or destructive software by implementing a range of protective cyber security procedures.

It applies to those working under a level of supervision who have responsibility to provide technical support, exercise discretion to protect devices and secure software in a workplace environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to protect devices from spam and destructive software	1.1 Research and identify common types of spam and destructive software 1.2 Identify protective measures against spam and destructive software according to organisational procedures 1.3 Select and install spam filter and virus protection software compatible with device 1.4 Update software according to organisational procedures and vendor instructions 1.5 Configure software security settings and spam filter for protection against destructive software according to

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ELEMENT	PERFORMANCE CRITERIA
	organisational procedures 1.6 Create schedule to run virus protection software according to organisational procedures
2. Initiate spam and destructive software protection procedures	2.1 Run virus protection and spam filter software according to schedule 2.2 Identify spam and destructive software on device 2.3 Report spam and destructive software to required personnel 2.4 Select protective measure for spam and destructive software removal according to organisational procedures 2.5 Remove spam and destructive software according to organisational procedures
3. Finalise and record protection measures	3.1 Document outcome of protective measures according to organisational procedures 3.2 Maintain records of spam and destructive software 3.3 Report outcomes of protective measures to required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Researches and interprets information to identify misleading information and compare technical specifications, and identify solutions to new and emerging issues to maintain system
Writing	• Accurately records and completes documentation according to organisational formats and procedures
Oral Communication	• Presents information in a clear manner, using specific and appropriate language
Teamwork	• Identifies and takes steps to follow accepted communication practices and protocols
Planning and organising	• Plans and implements routine tasks
Problem solving	• Initiates standard diagnostic procedures when responding to familiar and unfamiliar problems within immediate context, and seeks input from others when problems remain unresolved
Technology	• Interprets the purposes, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine tasks

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Unit Mapping Information

Supersedes and is equivalent to ICTSAS206 Detect and protect from spam and destructive software.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS214 Protect devices from spam and destructive software

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- detect and remove:
  - at least one piece of spam from a device
  - at least one piece of destructive software from a different device.

In the course of the above, the candidate must:

- identify spam types, destructive software and protective measures
- update spam filter and virus protection software as available
- maintain and report on protective measures taken against spam and destructive software.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- spam types and destructive software on a range of different devices including:
  - desktop computers
  - laptops
  - tablets
  - mobile and smartphones
  - wearables
  - media players
- organisational procedures regarding:
  - protective measures against spam and destructive software
  - software updates
  - software security and spam filter settings

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  - protective procedures for spam and destructive software removal
  - documenting and reporting outcome of protective measures
- spam and virus intrusions and remedial actions
- types of protective applications used against viruses and spam
- operating systems features and components
- components of hardware that may be affected by spam
- technical records, vendor documentation, enterprise procedures and guidelines.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- working areas with a representative range of devices, application software and operating systems
- industry standard antivirus and anti-spam software
- technical records and vendor instructions
- enterprise procedures and guidelines.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS215 Protect and secure information assets

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to ensure information assets are protected from improper access and to secure assets in the event that they are threatened.

It applies to those who, while working under a level of supervision in a frontline technical support capacity, have the responsibility to exercise security measures on information assets in a small or large office environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify assets and threats	1.1 Identify information assets in the organisation 1.2 Identify and record mechanisms by which information assets are accessed, transmitted and stored 1.3 Identify nature of threats to information assets and determine threat impact according to organisational processes
2. Protect assets	2.1 Identify and confirm actions, mechanisms and strategies to protect information assets with required personnel 2.2 Secure assets according to organisational procedures 2.3 Report outcomes and escalate issues to required personnel
3. Mitigate or prevent	3.1 Identify signs and evidence that information assets are

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ELEMENT	PERFORMANCE CRITERIA
damage to assets	threatened or undergoing loss or damage 3.2 Provide first level response to reduce effects, mitigate damage and protect evidence 3.3 Report incident, resulting effects and actions taken to required personnel
4. Document final condition of information assets	4.1 Finalise documentation outlining current state of information assets according to organisational procedures 4.2 Save, store and back up reports according to organisational procedures 4.3 Maintain records and reports of information assets according to organisational procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Reading	• Researches and interprets text to identify misleading information and compare technical specifications, and identify solutions to new and emerging issues to maintain system
Writing	• Accurately records and completes documentation according to organisational formats and procedures
Teamwork	• Identifies and takes steps to follow accepted communication practices and protocols
Planning and organising	• Interprets roles and responsibilities for task and makes basic decisions on work completion parameters in accordance with organisational standards • Plans and implements routine tasks
Problem Solving	• Initiates standard diagnostic procedures when responding to familiar and unfamiliar problems within immediate context, and seeks input from others when problems remain unresolved
Technology	• Interprets the purposes, specific functions and key features of common digital systems and tools, and operates them to complete routine tasks

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Unit Mapping Information

Supersedes and is equivalent to ICTSAS207 Protect and secure information assets.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS215 Protect and secure information assets

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- protect and secure at least two different information assets types.

In the course of the above, the candidate must:

- identify how information assets are used, specific to different organisations
- establish and analyse potential threats
- secure, mitigate and prevent damage to assets
- discuss details of security threats and issues relating to information assets
- document and report work issues.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- organisational procedures, including:
  - asset security
  - current state of information asset reporting
  - records and report of information asset maintenance
- key sources of information assets
- types of security responses available to secure assets
- organisational information assets
- general Information and Communications Technology (ICT) hardware and security implications
- security procedures relevant to organisational requirements.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- working areas with required hardware and office environments representing a range of workplaces
- software systems required to demonstrate the performance evidence
- organisational information assets
- technical records, documentation and enterprise procedures.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS216 Maintain ICT equipment and replace consumables

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to maintain the operation of basic Information and Communications Technology (ICT) equipment, and the replacement of consumables.

It applies to technical support individuals who, while working under a level of supervision, perform routine tasks within an office environment concerning the maintenance of ICT equipment and replacement of consumables. ICT equipment and consumables includes applications, chemicals, computer accessories, data storage devices, digital cameras, fax and copier supplies, laser and inkjet cartridges, ribbons, scanners and wireless technology modems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Access cleaning supplies and clean equipment	1.1 Access and verify cleaning supplies for usability on selected equipment with required personnel 1.2 Clean equipment according to manufacturer specifications, organisational manuals and work health and safety (WHS) principles and guidelines
2. Replace and manage ICT equipment	2.1 Access consumables from storage points and record usage according to organisational procedures

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Replace consumables and log action according to organisational procedures 2.3 Dispose of consumables following environmental guidelines 2.4 Test replaced consumables according to organisational procedures
3. Maintain ICT equipment	3.1 Identify and access ICT equipment according to maintenance guidelines 3.2 Maintain ICT equipment according to organisational procedures and manufacturer specifications 3.3 Document equipment information and maintenance procedures performed according to organisational procedures 3.4 Test equipment according to organisational procedures
4. Finalise maintenance activities	4.1 Plan maintenance schedule according to business needs to prevent interruption of business activities during maintenance procedures 4.2 Store unused consumables and ICT equipment according to manufacturer specifications and organisational procedures 4.3 Save and file maintenance documentation according to organisational procedures 4.4 Report and confirm work activity and outcomes with required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Integrates and evaluates a range of textual information to maintain effective methods and standards
Writing	• Accurately records and completes documentation according to organisational formats and procedures
Oral Communication	• Uses listening and questioning techniques to clarify schedules while maintaining business standards
Numeracy	• Recognises and applies familiar measurements relating to time durations
Self-management	• Interprets roles and responsibilities for task and makes basic decisions on work completion parameters in accordance with organisational procedures, WHS and environmental guidelines

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	• Plans and implements routine tasks
Problem solving	• Makes low-impact decisions within familiar situations, based on a range of predefined or routine solutions, and evaluates the effectiveness of the outcome
Technology	• Interprets the purposes, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine tasks

Unit Mapping Information

Supersedes and is equivalent to ICTSAS208 Maintain ICT equipment and consumables.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS216 Maintain ICT equipment and replace consumables

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- perform maintenance procedures on two different pieces of basic ICT equipment,
- replace and dispose of a consumable item from basic ICT equipment on at least one occasion.

In the course of the above, the candidate must:

- clean equipment following manufacturer specifications, organisation and WHS policy and procedures
- access, replace and dispose of consumables according to regulations and organisational policy
- test and maintain consumables and ICT equipment
- store unused consumables and ICT equipment
- document, record, log and store documentation of maintenance activities and confirm with required personnel.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- organisational procedures including:
  - consumables replacement information logs
  - consumables storage
  - consumables testing
  - ICT equipment maintenance documentation and filing procedures
  - storage and retrieval of information procedures
  - equipment and chemical storage, control and disposal procedures

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- industry standard hardware and software and manufacturer maintenance guides
- work health and safety procedures, principles and responsibilities that may be used in the process of maintaining ICT equipment and replacing consumables
- environmental guidelines that may be used in the storage and disposal of ICT equipment.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a site at which ICT equipment maintenance may be carried out
- cleaning supplies
- a range of consumables, such as those listed within the performance evidence
- ICT equipment currently used in industry
- equipment documentation required for maintenance activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS217 Connect a home based local wireless network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to install, configure and secure network components, such as a wireless router and adapters, to a small home based local wireless network.

It applies to individuals who, while working under a level of supervision, have responsibility in a frontline technical support capacity to connect a wireless router and adapters to a home-based wireless fidelity (Wi-Fi) network to provide wireless connectivity to compatible devices.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for installation	1.1 Document client requirements and confirm with required personnel 1.2 Identify documentation and technical support options 1.3 Identify digital devices to be connected to the network and confirm wireless network component requirements 1.4 Determine and confirm vendor warranty and support services 1.5 Identify required work health and safety (WHS) standards for installation process
2. Install and configure	2.1 Access digital devices and wireless network components

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ELEMENT	PERFORMANCE CRITERIA
wireless router and adapters	2.2 Validate contents of delivered components and physical contents match packing list and resolve discrepancies if required 2.3 Determine internet service provider (ISP) connection properties 2.4 Install wireless router according to manufacturer specifications 2.5 Configure wireless router using router configuration properties 2.6 Install wireless adapters according to manufacturer specifications 2.7 Configure Wi-Fi system according to router configuration properties
3. Secure the wireless system and finalise connection	3.1 Set security components of Wi-Fi system 3.2 Test security components and connectivity of Wi-Fi system 3.3 Update documentation regarding security issues and components used 3.4 Store any unused adapters 3.5 Dispose of waste following environmental guidelines

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Identifies and uses new and upgraded technology skills to enhance learning
Reading	• Interprets a range of texts to evaluate and integrate strategies and determine standards have been maintained
Writing	• Uses simple vocabulary to record information and prepare required documents in a sequential manner
Oral Communication	• Uses listening and questioning techniques to confirm requirements
Teamwork	• Identifies and takes steps to follow accepted communication practices and protocols
Planning and organising	• Interprets roles and responsibilities for task and makes basic decisions on work completion parameters in accordance with client requirements and WHS standards • Plans and implements routine tasks aiming to achieve them

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	efficiently
Problem solving	• Makes low-impact decisions within familiar situations, based on a range of predefined and routine solutions and evaluates outcome
Technology	• Utilises basic knowledge of industry hardware and software • Interprets the purpose and operates the specific functions and key features of digital systems and tools to complete routine tasks

Unit Mapping Information

Supersedes and is equivalent to ICTSAS209 Connect and use a home based local wireless network.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS217 Connect a home based local wireless network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- install, configure and secure a wireless router and its adapters, to a small home based local wireless network on at least two separate occasions.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- computer component installation procedures
- industry accepted Wi-Fi network products
- manufacturer specifications that may be used in the process of connecting a home based local wireless network
- router configuration properties
- Wi-Fi installation requirements
- Wi-Fi systems and Wi-Fi security considerations
- ISP connection protocols
- vendor warranty and support services
- environmental guidelines for waste disposal
- WHS standards and procedures that may be used in the process of connecting a home based local wireless network
- wireless network components.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

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- internet access
- industry standard wireless router and adapters
- digital devices connected to the network
- technical support and documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS309 Maintain and repair ICT equipment and software

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to carry out maintenance and fault repair according to organisational procedures, in order to keep Information and Communications Technology (ICT) equipment and software operating.

It applies to frontline technical support individuals who work under a level of supervision and have some responsibility to maintain and repair ICT equipment and software.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine and undertake required equipment maintenance	1.1 Access ICT equipment that requires maintenance 1.2 Examine and review organisational ICT equipment maintenance procedures 1.3 Determine and undertake internal maintenance according to organisational maintenance procedures 1.4 Report problems to required personnel
2. Diagnose and repair faults	2.1 Identify faulty ICT equipment and software 2.2 Test faulty ICT equipment and software according to manufacturing guidelines and task requirements 2.3 Analyse test results

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ELEMENT	PERFORMANCE CRITERIA
	2.4 Review historical fault data 2.5 Develop plans, with prioritised tasks and contingency arrangements for repair and replacement of faulty equipment and software 2.6 Liaise with required personnel and obtain plan approvals 2.7 Obtain ICT components and repair equipment and software in a timely, organised manner, following work health and safety (WHS) standards
3. Update documentation and make recommendations for future maintenance	3.1 Record maintenance, fault data and equipment modifications according to organisational standards 3.2 Identify and report instances where preventative measures were required 3.3 Dispose of faulty parts and other waste according to environmental guidelines 3.4 Review and update maintenance and fault data and report outcomes to required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Integrates and evaluates a range of textual information to record and maintain required procedures
Writing	• Conveys specific information using precise language and the required format for intended audience and purpose and records information
Oral Communication	• Articulates clearly using required language and listening and questioning techniques to report data and confirm proposed plans
Numeracy	• Recognises and applies familiar measurements relating to time durations
Teamwork	• Works in a team and contributes to broader work goals when addressing organisational standards and reporting to required personnel • Communicates in the required format with whom and how when reporting problems, gaining approval for plans and

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	reviewing and updating data and reporting outcomes
Planning and organising	• Plans a range of routine and some non-routine maintenance tasks and repair and replacement of faulty equipment, accepting stated goals and aiming to achieve them efficiently
Problem solving	• Selects from a range of predetermined options in routine situations, identifying and taking situational factors into account when determining whether procedures can be handled internally • Selects from a range of predetermined options when diagnosing and repairing faults, identifying and taking situational factors into account
Technology	• Interprets key principles and concepts that underpin the design and operation of digital systems and tools, and applies these when troubleshooting existing technology, repairing faults and making recommendations for future maintenance

Unit Mapping Information

Supersedes and is equivalent to ICTSAS306 Maintain equipment and software.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS309 Maintain and repair ICT equipment and software

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- carry out maintenance and fault repair procedures on the following, on at least one separate occasion:
  - ICT equipment
  - software.

In the course of the above, the candidate must:

- obtain and review previous ICT equipment fault data
- resolve failures and performance degradation
- analyse test results
- examine and review organisational ICT equipment maintenance procedures
- undertake maintenance according to organisational maintenance procedures
- identify and repair a range of ICT equipment and software problems
- develop plans for maintenance and fault repair
- maintain accurate records according to organisational guidelines.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- equipment and software purpose, standard operating characteristics and maintenance procedures
- internal maintenance organisational procedures
- preventative maintenance procedures
- technical documents in regard to:
  - equipment and maintenance procedures

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  - help-desk response level escalation procedures
  - operation of technical diagnostic tools
- quality assurance practices that may be used in maintaining and repairing ICT equipment and software
- Service Level Agreements (SLAs) to determine conditions of the SLA cover
- client warranty claims, repair and replacement procedures
- environmental guidelines that may be used in maintaining and repairing ICT equipment and software.
- organisational work health and safety (WHS) procedures that relate to maintaining and repairing.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- technical environment with a variety of ICT equipment
- maintenance software and tools
- technical documentation
- organisational health and safety procedures.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS310 Install, configure and secure a small office or home office network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to identify available network components and client requirements and to install, configure and secure those components as part of a Small Office or Home Office (SOHO) network.

It applies to individuals who work under a level of supervision and have experience with analysis and problem solving when working with technologies.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Confirm client requirements and identify required network equipment	1.1 Identify and clarify client requirements for SOHO network 1.2 Identify, develop and document SOHO network design according to client requirements 1.3 Identify network materials according to SOHO network design 1.4 Obtain vendor and service suppliers specifications and cost of identified components, with required vendors 1.5 Present SOHO network design to clients and secure sign-off
2. Install and configure hardware and	2.1 Develop installation plans according organisational requirements 2.2 Obtain approval for plans, security clearance and timing with

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ELEMENT	PERFORMANCE CRITERIA
software	required personnel 2.3 Confirm and review cables and connectors are installed according to industry standards, client requirements and building requirements 2.4 Install and configure hardware according to network design and industry standards 2.5 Install and configure software according to network design and industry standards
3. Test network	3.1 Troubleshoot client-side connectivity using required networking settings 3.2 Test installed software and hardware according to organisational procedures 3.3 Test network settings according to organisational procedures 3.4 Resolve problems identified according to organisational procedures
4. Secure network	4.1 Identify security features for SOHO network 4.2 Apply identified security features according to organisational procedures 4.3 Troubleshoot security intrusion symptoms and issues
5. Finalise network installation and configuration	5.1 Finalise and document network design, associated hardware, software and security features 5.2 Document installation, boot up and configuration procedures according to client requirements 5.3 Handover and secure sign-off from client

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Interprets a range of texts to critically evaluate and design the required network, comparing technical specifications and associated costs to install and maintain the network
Writing	• Records information using precise language and required format to develop network plans, instructions, installation and technical specifications
Oral Communication	• Confirms information and requirements, using effective communication techniques and industry standard technical

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SKILL	DESCRIPTION
	language intended for audience and environment
Numeracy	• Uses a range of mathematical calculations to evaluate and compare numerical information and forecast costs and applies familiar measurements concerning available or consumed data, time durations and required cable length
Planning and organising	• Plans a range of routine and some non-routine tasks, accepting stated goals and aiming to achieve them efficiently, confirming client requirements and required equipment • Implements actions as per plan, making slight adjustments if required and addressing some unexpected issues
Problem solving	• Makes decisions quickly and intuitively in familiar situations requiring immediate attention, drawing on past experience to identify key variables, consider implications of different courses of action and determine course of action • Uses systematic, analytical processes in configuration and testing of network, setting goals, gathering required information and identifying and evaluating options against agreed criteria • Applies formal problem-solving processes when resolving network problems and troubleshooting symptoms and issues, breaking complex issues into manageable parts and identifying and evaluating several options for action
Self-management	• Recognises and follows explicit and implicit protocols and meets expectations associated with own role when obtaining approval and sign-off at required stages of job
Technology	• Utilises key principles and concepts that underpin the design and operation of digital systems and tools

Unit Mapping Information

Supersedes and is equivalent to ICTSAS307 Install, configure and secure a small office home office network.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS310 Install, configure and secure a small office or home office network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- install, configure and secure a SOHO network on at least one occasion.

In the course of the above, the candidate must:

- install, configure and test hardware and software for SOHO network, including:
  - network technologies
  - device
  - protocols
  - network cables and connectors
- install, configure and test the network according to client requirements and produce required documentation
- troubleshoot client-side connectivity and security system symptoms and issues
- liaise with vendors and service suppliers to:
  - obtain specifications, availability and cost of identified components
- develop installation plans that incorporate:
  - task prioritisation
  - contingency arrangements
  - minimum disruption to clients
- document final network design, security features and installation, boot up and configuration procedures.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry accepted hardware and software products, including those used for networks

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- building requirements that may be used in installing, configuring and securing an office
- data and voice transmission technologies and protocols
- hardware and software installation procedures
- organisational procedures including:
  - software and hardware testing methods
  - network setting testing methods
  - software, hardware and network setting problem resolution procedures
- local area network (LAN) capabilities and characteristics, including:
  - network types
  - internet protocol addressing
  - switch and hub operation
- network connections, both wired and wireless
- networking technologies, including network operating systems and cabling standards
- network tools, set-up and configuration procedures
- security implications and methods for a home office network
- software packages supported by the organisation
- industry standards applicable to small networks
- installation and configuration tools.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- industry standard software, hardware and networking technologies
- server and workstation hardware and software
- internet connection
- live network
- network components, hardware and software
- networked devices
- vendor hardware and software components
- technical documentation and installation manuals.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS422 Scope implementation requirements

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to define boundaries and deliverables of a system installation project, in one location, in the context of an overall implementation plan.

It applies to individuals who apply specialised and technical knowledge to strategic initiatives and project planning.

No licensing, legislative, or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine scope	1.1 Review project plan and other documentation 1.2 Determine installation requirements 1.3 Identify other implementation issues
2. Confirm scope with parties	2.1 Develop and document preliminary project scope and submit to appropriate person 2.2 Review requests for revision to scope

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ELEMENT	PERFORMANCE CRITERIA
	2.3 Identify areas for further development 2.4 Prepare implementation plan and forward to appropriate person
3. Update plans to account for scope	3.1 Review implementation plan, taking into account scope of system 3.2 Review key dates and events to determine if conflicts exist 3.3 Confirm revised plans and documents with appropriate person for final approval and sign-off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 2.2, 2.3, 3.1, 3.2	• Researches and analyses complex technical and non-technical information from a range of sources to determine requirements and complete necessary actions
Writing	2.1, 2.4, 3.3	• Develops material for a specific audience using clear and detailed language and appropriate formats to convey explicit information, requirements and recommendations • Reviews and updates documentation based on feedback received
Oral Communication	3.3	• Participates in verbal exchanges using clear and concise language to convey and clarify complex technical information
Numeracy	1.1, 1.2, 2.1, 3.1, 3.2	• Uses mathematical equations to calculate, compare and estimate numerical and financial data required for planning and scheduling
Interact with others	2.1, 2.4, 3.3	• Selects and uses appropriate conventions and protocols when communicating with others in a range of work contexts
Get the work done	1.1-1.3, 2.1-2.4, 3.1-3.3	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes • Applies analytical processes to resolve technical or conceptual problems

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		• Uses main features and functions of digital tools to complete work tasks

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTSAS422 Scope implementation requirements	ICASAS422A Scope implementation requirements	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS422 Scope implementation requirements

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- prepare a project plan and implement an approach that addresses:
  - drivers
  - measures of success
  - implementation by functional area
  - coordination.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify and describe project planning, including the scope and roles of individuals
- outline the key features of:
  - client business domain
  - information and communications technology (ICT) related services and issues
- identify and describe possible legislative requirements relating to cabling and building preservation
- describe the role of stakeholders and degree of stakeholder involvement
- summarise current trends in vendor products
- analyse and describe:
  - current industry accepted hardware and software products
  - prerequisites needed for system installation
  - vendor specifications and requirements for installation.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the systems administration and support field of work and include access to special purpose tools, equipment, materials and industry software packages, including:

- project documentation
- staff
- resources
- technical equipment.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS428 Hand over ICT system components to clients

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to ensure the Information and Communications Technology (ICT) system is operational prior to hand over for client use, including conducting formal testing and trials to determine whether the system satisfies its acceptance criteria.

It applies to individuals who work under supervision but have a level of responsibility ensuring work is planned and completed according to quality and client requirements.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Confirm system integrity	1.1 Obtain acceptance criteria for client ICT system 1.2 Check ICT system function and its components in stand-alone and integrated environments 1.3 Specify and document shortcomings and problems and create action plan 1.4 Review action plan with client 1.5 Document system components according to organisational standards and procedures
2. Provide operation and maintenance	2.1 Identify and document operational issues and procedures according to organisational procedures

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ELEMENT	PERFORMANCE CRITERIA
guidance	2.2 Discuss maintenance issues with technical support personnel and document proposed outcomes 2.3 Compare maintenance, operational and warranty considerations with service level agreements (SLAs) and document discrepancies 2.4 Clarify outstanding issues with client 2.5 Implement solution to identified problems with technical support personnel 2.6 Create and confirm client report with required personnel
3. Hand over system to client	3.1 Demonstrate installed system to client and seek and respond to feedback 3.2 Obtain confirmation of client satisfaction and sign-off 3.3 Discuss, confirm and document implementation support and further training needs with client 3.4 Report needs and submit to required personnel for action

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Reading	• Interprets and analyses technical information containing numeric data and textual specifications to determine and adhere to requirements
Writing	• Prepares workplace documentation detailing process and outcomes using appropriate structure, layout and technical language
Oral Communication	• Confirms information and requirements, using effective communication techniques and industry standard technical language intended for audience and environment
Teamwork	• Selects and uses required conventions and protocols when communicating with client and others in a range of work contexts
Planning and organising	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes
Problem solving	• Uses formal analytical thinking techniques for identifying issues and generating solutions, seeking input from others as required

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Self-management	• Takes personal responsibility for following explicit and implicit policies, procedures and standards
Technology	• Uses the main features and functions of digital tools to complete work tasks

Unit Mapping Information

Supersedes and is equivalent to ICTSAS406 Implement and hand over system components.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS428 Hand over ICT system components to clients

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- demonstrate operation and hand over a functioning ICT system to clients on at least two occasions.

In the course of the above, the candidate must:

- obtain ICT system acceptance criteria
- check ICT system function and its components in both:
- stand-alone environment
- integrated environment
- identify and document system components, operational issues and procedures
- discuss maintenance issues with technical support
- compare maintenance, operational and warranty considerations with SLAs
- provide operational and maintenance guidance.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- business practices related to preparing reports, including:
  - confirming system integrity
  - handing over the system
- organisational procedures including:
  - system component documentation
  - operational issue documentation
  - operational procedures for ICT systems
- industry accepted hardware and software products

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- key aspects of change management systems and operational procedures for ICT systems
- client-business domain issues
- information gathering techniques that may be used in the hand over ICT system components to clients
- key features and processes involved in project planning, including:
  - constraints
  - guidelines
  - deadlines
- key features of quality assurance practices that may be used in the hand over ICT system components to clients
- role of stakeholders in SLAs and degree of stakeholder involvement in determining levels of responsibility in a project
- vendor product trends.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- existing ICT systems for client delivery, such as customer computer sites and systems or other simulated systems
- ICT system acceptance criteria
- special purpose tools, equipment and materials
- industry software packages
- implementation plan
- people involved in hand over
- project plan
- SLAs.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS432 Identify and resolve client ICT problems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to identify, record, prioritise and resolve client Information and Communications Technology (ICT) support activities and escalate as required.

It applies to experienced individuals who use specialised and technical knowledge to take responsibility in providing client-based ICT support to end users in an office or working environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to resolve client ICT problems	1.1 Determine client problems and impact of problem according to organisational procedures 1.2 Document client response according to organisational policies and procedures 1.3 Examine logged requests and determine requirements 1.4 Confirm additional information with client and respond to new information according to organisational procedures 1.5 Refer to database of known problems and identify resolution options 1.6 Establish and record required constraints

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ELEMENT	PERFORMANCE CRITERIA
2. Prioritise client ICT problems	2.1 Undertake impact analysis of problem and determine severity and risks 2.2 Prioritise problem according to organisational procedures 2.3 Provide problem resolution advice and support to client
3. Refer problems where required	3.1 Investigate and refer problems to third parties according to organisational procedures 3.2 Provide third party with client and problem details as required 3.3 Document advice and support provided by third party according to organisational procedures
4. Carry out maintenance	4.1 Obtain required components for resolution according to organisational procedures 4.2 Complete maintenance according to organisational procedures 4.3 Store and dispose of used components according to organisational environmental guidelines
5. Create maintenance report	5.1 Prepare maintenance report according to organisational procedures 5.2 Finalise maintenance report and acquire internal sign off 5.3 Distribute maintenance report to client and seek and respond to client feedback as required
6. Confirm problem resolution	6.1 Obtain and respond to client feedback 6.2 Confirm client requirements have been met 6.3 Resolve outstanding client requirements and escalate as required 6.4 Forward client feedback to required personnel for sign-off and record in problems database

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Interprets technical specifications and numerical data from a range of documentation and sources to assist in rectifying problems
Writing	• Uses clear language and formats required for the audience to convey explicit technical information, requirements and recommendations

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Oral Communication	• Uses inclusive questioning techniques to obtain information from clients and provides precise advice and information to others
Teamwork	• Selects and uses required conventions and protocols when communicating with client and others in a range of work contexts
Problem solving	• Uses formal analytical thinking techniques for identifying issues and generating solutions, seeking input from others as required
Self-management	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes
Technology	• Uses main features and functions of digital tools to complete work tasks

Unit Mapping Information

Supersedes and is equivalent to ICTSAS410 Identify and resolve client ICT problems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS432 Identify and resolve client ICT problems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify, record, prioritise and resolve a client ICT problem on at least two separate occasions.

In the course of the above, the candidate must:

- record and prioritise client support activities
- determine required resources for maintenance activities
- prioritise client ICT problems, using an impact analysis of the problem
- complete maintenance activities
- resolve client problems and escalate according to organisational guidelines and practices
- refer problems to third parties where required
- prepare, finalise and distribute maintenance report, including information about problems and resolution action
- provide advice to the client and seek and record client feedback
- store and dispose used components.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- hardware and software products:
  - in use
  - supported by the organisation
- organisational procedures, including:
  - problem prioritisation
  - third party support and documentation

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  - maintenance procedures
  - maintenance report preparation and distribution
- sustainable practices consistent with ICT industry
- environmental guidelines that may apply to identifying and resolving client ICT problems
- help desk or service desk structure and escalation procedures
- key functions and basic features of operating system
- organisational structure of workplace that may be relevant to identifying and resolving client ICT problems
- workplace security and network guidelines and procedures.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- special purpose tools, equipment and materials for maintenance
- industry software packages
- a range of industry hardware, software and diagnostic tools
- technical records
- organisational guidelines
- vendor documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS433 Update ICT client support procedures and assist with policy development

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes skills and knowledge required to formulate and update Information and Communications Technology (ICT) client support procedures to be included within organisational policy.

It applies to experienced individuals who work under supervision and have a level of responsibility to ensure client policy development is completed to quality standards and requirements.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine policy support issues	1.1 Review client support procedures 1.2 Gather feedback from client detailing positive and negative aspects of their contact with the organisation 1.3 Gather feedback from user who executes client support procedures, detailing problems with methods
2. Revise client support procedures	2.1 Determine feedback applicable to client support procedures 2.2 Create and update client support procedures 2.3 Forward new client support procedures to required

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ELEMENT	PERFORMANCE CRITERIA
	personnel and seek and respond to client feedback
3. Provide recommendations for client support policy	3.1 Evaluate client support policy feedback 3.2 Incorporate changes to client support policy 3.3 Determine impact of new policy on organisational guidelines and client interactions 3.4 Prepare report detailing changes in policy and impact on client and user 3.5 Forward report and updated policy to required personnel and obtain approval
4. Update client support policy	4.1 Amend policies and include new client support procedures 4.2 Issue new policies to clients and users according to organisational guidelines 4.3 Maintain policy updates according to organisational guidelines

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Interprets and analyses technical information and numerical data from different sources to determine requirements and complete required actions
Writing	• Develops and presents information logically and concisely, using required formats and clear and accurate language
Oral Communication	• Confirms information and requirements, using effective communication techniques and industry standard technical language intended for audience and environment
Numeracy	• Interprets, analyses and presents numeric information in documents and reports
Initiative and enterprise	• Takes personal responsibility for maintaining policies as required by organisational guideline
Problem solving	• Uses formal analytical thinking techniques for identifying issues and generating solutions, seeking input from others as required
Teamwork	• Selects and uses required conventions and protocols when communicating with client and others in a range of work

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	contexts
Self-management	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes

Unit Mapping Information

Supersedes and is equivalent to ICTSAS411 Assist with policy development for client support procedures.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS433 Update ICT client support procedures and assist with policy development

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- update ICT client support procedures and assist in the formulation of associated policy documents on at least one occasion.

In the course of the above, the candidate must:

- evaluate and analyse existing client support policy and procedures
- elicit feedback to be applied to support procedures and review proposed changes
- make recommendations for changes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- trends and issues in ICT client support
- policy and support recommendation and development practices
- organisational guidelines including:
  - client maintenance and administration
  - policy maintenance updates and key stages of the client review process
- organisational policy including:
  - access of procedures
  - security.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

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This includes access to:

- tools, equipment and materials for support procedures
- industry software packages
- sites, peers and supervisors to identify the extent and quality of the contribution required
- information about systems or networks to be supported
- technical manuals, tools and organisational guidelines
- business requirements and documentation standards.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS434 Action change requests and present updated ICT system to clients

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to receive, review and carry out change requests using a change management system according to client requirements and present the outcome of change requests to clients.

This unit applies to individuals who work using specialised and technical knowledge to ensure change requests are completed according to quality standards and work using communication skills to present outcomes of change requests and how to use the updated Information and Communications Technology (ICT) system to clients.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Receive and review change requests	1.1 Receive and document requests for hardware and software changes from client 1.2 Gather and organise required ICT system data 1.3 Review proposed changes against current and future business requirements and examine system data 1.4 Select and prioritise required changes 1.5 Discuss and clarify selected changes with client

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ELEMENT	PERFORMANCE CRITERIA
2. Modify system according to requested changes	2.1 Develop ICT system modification plan 2.2 Undertake selected ICT system changes according to organisational guidelines and procedures and manufacturer recommendations 2.3 Test ICT system performance and identify problems 2.4 Resolve identified problems and confirm with required personnel as required 2.5 Revise client and technical documentation and ensure ICT system changes comply with organisational standards 2.6 Notify client of change and update change management system, according to organisational help desk procedures
3. Prepare and deliver training on use of modified ICT system	3.1 Develop client training materials on the changed ICT system 3.2 Finalise training outcomes according to organisational requirements 3.3 Seek training delivery approval from required personnel 3.4 Deliver prepared training to client
4. Finalise change request and training activities	4.1 Confirm change is tested and operational according to organisational procedures 4.2 Prepare report and deliver to required personnel, indicating the results of change request and training according to organisational procedures 4.3 Hand over ICT system to client

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Interprets and analyses technical textual information and numerical data to determine requirements and complete required actions
Writing	• Uses clear language and formats required for the task to record and update explicit technical information, requirements and recommendations
Oral Communication	• Confirms information and requirements, using effective communication techniques and industry standard technical language intended for audience and environment

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Teamwork	• Selects and uses required conventions and protocols when communicating with co-workers and clients in a range of work contexts • Reviews proposed changes and confirms actions with work team
Problem solving	• Uses formal analytical thinking techniques for identifying issues and generating solutions, seeking input from others as required
Self-management	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes
Technology	• Uses main features and functions of digital tools to complete work tasks

Unit Mapping Information

Supersedes and is equivalent to ICTSAS412 Action change requests.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS434 Action change requests and present updated ICT system to clients

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- receive, review and carry out a change requests according to client requirements and present the outcomes of those changes back to the client on two separate occasions.

In the course of the above, the candidate must:

- receive, review, document and assess change requests and requirements
- plan, implement and test change procedures
- comply with organisational guidelines and client requirements
- prepare and deliver training appropriate to the client.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- organisational procedures, including:
  - help desk procedures
  - system change processes
  - change request reporting
- practices relating to:
  - change management procedures and criteria
  - change-management tools and systems
  - diagnostic tools
  - help desk practices
  - quality assurance practices
- client business domain, including:
  - role of stakeholders

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  - degree of stakeholder involvement
- system modification plans
- industry-accepted hardware and software products
- service level agreements (SLAs) within or between organisations
- process for system testing
- system's functionality.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- tools, equipment and materials required for actioning change requests
- training environment, including all required tools, equipment and materials to present changes
- industry software packages
- change request documentation
- physical system or network
- technical manuals required diagnostic tools
- business requirements
- documentation standards
- change management system.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS435 Resolve system faults on a live system

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to manage the modification of reactive errors and failures on a live system to resolve system faults.

It applies to individuals who apply specialised and technical knowledge, management skills and a systematic approach to monitor, maintain and troubleshoot maintenance requirements on systems that are operating.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify repositories and develop modifications for live system	1.1 Identify existence and currency of repositories 1.2 Review repositories and develop new backup procedures 1.3 Identify system faults 1.4 Identify the nature and effect of modifications to the system 1.5 Prepare and check change request forms and levels of authority for sign-off according to organisational procedures 1.6 Develop a hierarchy of modifications and document expected outcomes of each 1.7 Inform users of implications and impacts of modifications 1.8 Determine existing backup and blackout strategies

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ELEMENT	PERFORMANCE CRITERIA
2. Implement modifications for live system	2.1 Identify standards and procedures for logging change request 2.2 Log change request according to organisational requirements 2.3 Identify levels of failure and reporting procedures 2.4 Assign modification to required personnel 2.5 Oversee modification implementation
3. Review and report results	3.1 Confirm modification is tested and operational according to organisational procedures 3.2 Prepare report and deliver to required personnel, indicating the results of modification according to organisational procedures 3.3 Update and amend documentation and repositories according to organisational procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Interprets technical and non-technical information and numerical data from a range of documentation and sources to assist with troubleshooting and rectifying problems
Writing	• Records and reports information logically, using required formats and structures and revises and updates documentation and repositories based on outcomes of action
Oral Communication	• Confirms and presents information and requirements, using effective communication techniques and industry standard technical language intended for audience and environment
Numeracy	• Uses mathematical equations to calculate and compare numerical data to determine required actions and for preparing technical reports
Teamwork	• Selects and uses required conventions and protocols when communicating with co-workers and others in a range of work contexts
Problem solving	• Uses formal analytical thinking and problem-solving techniques for identifying issues and generating solutions, seeking input from others as required
Self-management	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes

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Technology	• Uses main features and functions of digital tools to complete work tasks

Unit Mapping Information

Supersedes and is equivalent to ICTSAS413 Manage resolution of system faults on a live system.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS435 Resolve system faults on a live system

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- manage system fault resolution on a live system on at least two occasions.

In the course of the above, the candidate must:

- identify the required modifications and the associated effect, implication and impact of each
- itemise the expected outcomes of the modifications
- oversee implementation of modification and test operation
- document and report on the modifications.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- organisational procedures including:
  - change request forms
  - levels of authority for sign-off
  - modification operation testing
  - modification reports
  - modification documents and repositories
- change control procedures
- client business domain including the role of stakeholders and the degree of stakeholder involvement
- industry accepted hardware and software products
- help desk and maintenance practices
- quality assurance practices that relate to resolving system faults on a live system

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- the process for system testing
- the system's functionality and the features and functions of the system under modification
- Information and Communications Technology (ICT) industry fault resolution standards.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- required tools, equipment and materials for system fault management, modification and resolution
- live system
- benchmarking and testing tools
- reporting tools.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS436 Evaluate ICT system status

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes skills and knowledge required to evaluate the status of a running system, covering both hardware and software aspects to determine system performance and reliability while Information and Communications Technology (ICT) system is still in an operational state.

It applies to individuals who apply specialised and technical knowledge and a systematic approach to assessing and evaluating ICT systems prior to problem resolution or upgrades.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for ICT system evaluation	1.1 Access ICT system according to organisational procedures 1.2 Determine scope of ICT system status evaluation and performance indicators and agree with client 1.3 Review evaluation purpose using required capacity tools 1.4 Plan a ‘change of status’ test according to organisational procedures 1.5 Plan and document ICT system status evaluation and required resources according to organisational procedures 1.6 Alert affected users of ICT system status evaluation impacts as required

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ELEMENT	PERFORMANCE CRITERIA
	1.7 Access resources required for ICT system status evaluation
2. Carry out ICT system evaluation	2.1 Organise required resources and implement evaluation methods 2.2 Run ICT system evaluation according to agreed scope, evaluation parameters and organisational procedures 2.3 Record ICT system status and reliability according to procedural parameters and evaluation plan 2.4 Run 'change of status' test according to organisational procedures 2.5 Observe and record effects of changes to ICT system status according to effect being evaluated 2.6 Observe and record effects of changes to ICT system status not being evaluated 2.7 Escalate unresolved effects of changes to ICT system status to required personnel
3. Report on ICT system evaluation	3.1 Document anomalies observed in ICT system status evaluation outside expected results 3.2 Finalise ICT system status evaluation procedures according to organisational procedures 3.3 Prepare report for required personnel 3.4 Formulate and present recommendations to required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Analyses and evaluates technical and non-technical information and numerical data from a range of sources to assist with fault finding and troubleshooting problems
Writing	• Prepares material using clear and accurate language and numerical data to convey explicit information, requirements and recommendations
Oral Communication	• Articulates information and strategies using effective communication techniques and industry standard technical language intended for audience and environment

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Numeracy	• Uses mathematical equations to calculate and compare numerical data to determine required actions and for preparing technical reports
Teamwork	• Selects and uses required conventions and protocols when communicating with client and others in a range of work contexts
Problem solving	• Uses formal analytical thinking techniques for identifying issues and generating solutions
Self-management	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes
Technology	• Uses main features and functions of digital tools to complete work tasks

Unit Mapping Information

Supersedes and is equivalent to ICTSAS414 Evaluate system status.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS436 Evaluate ICT system status

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- evaluate the performance and reliability status of a running ICT system's hardware and software for at least two different systems, on separate occasions.

In the course of the above, the candidate must:

- determine scope of system performance evaluation and reliability for hardware and software
- identify performance indicators
- access and organise required resources
- evaluate system performance and record status and reliability
- observe and record effects of changes to ICT system status
- document and report on results, reliability, changes, anomalies and recommendations for improvements.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- organisational procedures that may be used to evaluate ICT system status, including:
  - 'change of status' test planning
  - ICT system evaluating, evaluation planning and finalisation
  - capacity planning and change management tools
  - change-control procedures
- client business domains, including the role and level of stakeholder involvement
- industry standard hardware and software products

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- help desk and maintenance practices that are used on the evaluating the status of ICT systems
- quality assurance practices that may be used to evaluate ICT system status
- reasons for system evaluation, including objectives, deliverables and key performance indicators
- ICT system testing procedures
- status evaluation, including:
  - time, environmental, internal and external factors
  - manual and computerised methods of status evaluation
- system functionality characteristics.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- tools, equipment and materials for system status evaluation
- industry software packages
- documentation standards
- backup and recovery policies
- database package with data
- server and networked personal computer.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS437 Optimise ICT system performance

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to identify, modify, improve and monitor Information and Communications Technology (ICT) system performance.

It applies to individuals who apply experienced technical support knowledge to maintain computer system performance, and operate in roles such as help desk supervisors, ICT support technicians and user support specialists.

No licensing, legislative, or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine ICT system performance	1.1 Access ICT system according to organisational procedures 1.2 Determine client requirements and ICT system performance benchmarks 1.3 Collect ICT system performance data 1.4 Analyse collected system performance data according to performance benchmarks and client requirements 1.5 Identify and document areas of poor ICT system performance
2. Investigate methods to improve ICT system performance	2.1 Discuss ICT system performance findings with required personnel 2.2 Identify performance improvement options and determine required technical resources

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ELEMENT	PERFORMANCE CRITERIA
	2.3 Create ICT system report for required personnel 2.4 Submit report to required personnel
3. Develop implementation plan for ICT system optimisation	3.1 Develop optimisation implementation plan according to task requirements 3.2 Submit implementation plan to required personnel and seek approval
4. Modify ICT system to optimise performance	4.1 Install ICT system improvements according to installation procedures and implementation plan 4.2 Configure ICT system components according organisational procedures and implementation plan 4.3 Measure and record change in performance resulting from ICT system modification 4.4 Assess optimisation against required level of optimisation 4.5 Update required documentation according to organisational procedures
5. Monitor ongoing ICT system performance	5.1 Implement and maintain performance register 5.2 Confirm all optimisation procedures have been performed according to task requirements 5.3 Review and assess benchmarks and impact of implemented optimisation procedures 5.4 Evaluate and report on optimisation procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Analyses and evaluates technical and non-technical information and numerical data from a range of sources to determine benchmarks and performance indicators
Writing	• Accurately records information and numerical data and prepares material using clear and accurate language to convey explicit information, requirements and recommendations
Oral Communication	• Uses active listening and questioning techniques and participates in verbal exchanges with a range of stakeholders to obtain information and express requirements
Numeracy	• Uses mathematical equations to calculate and compare numerical and financial data to determine required actions and

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SKILL	DESCRIPTION
	for preparing technical reports
Initiative and enterprise	• Takes personal responsibility for following explicit and implicit policies and procedures
Teamwork	• Selects and uses required conventions and protocols when communicating with co-workers and others in a range of work contexts • Collaborates with others to achieve shared goals
Problem solving	• Applies analytical processes to resolve technical or conceptual problems
Self-management	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes
Technology	• Uses main features and functions of digital tools to complete work tasks

Unit Mapping Information

Supersedes and is equivalent to ICTSAS415 Optimise ICT system performance.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS437 Optimise ICT system performance

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- optimise the performance of two different ICT systems, on separate occasions.

In the course of the above, the candidate must:

- collect usage and time conditions and analyse ICT system data and performance
- identify and document areas of poor ICT system performance
- identify options to improve performance and determine required technical resources
- access required technical resources
- create optimisation implementation plan to improve performance and submit to required personnel for approval and feedback, including:
  - disruption minimisation plan
  - project budget
  - staff availability
- create ICT system report, including:
  - cost analysis
  - identified improvements
  - alternate options
- develop plan for implementing approved optimisation
- modify and tune ICT system to ensure system balance and performance
- record changes in performance.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- report development including:

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  - cost analysis
  - identified options for alternative courses of action designed to measurably improve ICT system performance
- business scheduling requirements, including the role of stakeholders and the degree of stakeholder involvement
- industry standard hardware and software monitoring tools and the information produced from monitoring
- optimum system performance, change-control procedures and theoretical concepts
- change management tools that may be used in optimising ICT system performance
- quality assurance practices with regard to proposed changes of ICT systems
- ICT system functionality and performance indicators
- ICT system performance improvement and optimisation strategies
- features and functions of ICT system under modification.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- tools, equipment and materials required to optimise ICT systems
- industry software packages, including:
  - system components
  - software for performance tuning
  - technical manuals and resources
  - fault logs
  - diagnostic tools.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS438 Implement maintenance procedures

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to improve existing organisational maintenance procedures to keep equipment and software operating effectively.

It applies to individuals who use technical and specialised knowledge and apply a systematic approach to maintaining computer equipment in an organisation.

No licensing, legislative, or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine maintenance procedures for equipment and software	1.1 Identify equipment and software that requires maintenance 1.2 Obtain equipment and software maintenance and reliability data from user 1.3 Obtain and examine vendor documentation, peer organisations and research information 1.4 Document equipment and software maintenance procedures 1.5 Develop recommended maintenance and operations guidelines 1.6 Identify and record in-house resources, external organisations and third-party suppliers support 1.7 Develop and update service level agreement (SLA) with internal user and third-party supplier information

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ELEMENT	PERFORMANCE CRITERIA
2. Revise and improve maintenance procedures	2.1 Monitor and review organisational maintenance procedures 2.2 Identify problem areas according to organisational maintenance procedures 2.3 Design improvements to organisational maintenance procedures and seek approval from required personnel 2.4 Assess impact and ease of implementing improvements 2.5 Implement improvements to organisational maintenance procedures
3. Finalise maintenance improvement procedures	3.1 Identify future equipment and software acquisitions 3.2 Confirm all maintenance procedures have been performed 3.3 Review and assess maintenance procedures impact 3.4 Evaluate and report on organisational maintenance procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Researches and analyses technical and non-technical information and numerical data from a range of sources to determine benchmarks and performance indicators
Writing	• Accurately records information and numerical data and prepares material using clear and accurate language to convey explicit information, requirements and recommendations
Oral Communication	• Uses active listening and questioning techniques and participates in verbal exchanges with a range of stakeholders in formal and informal situations to obtain information and express requirements
Numeracy	• Uses mathematical equations to calculate and compare numerical data to determine required actions and for preparing documentation
Teamwork	• Selects and uses required conventions and protocols when communicating with users and others in a range of work contexts
Problem solving	• Applies analytical processes to resolve technical or conceptual problems

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Self-management	• Takes responsibility for planning, sequencing and prioritising tasks and own workload
Technology	• Uses main features and functions of digital tools to complete work tasks

Unit Mapping Information

Supersedes and is equivalent to ICTSAS416 Implement maintenance procedures.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS438 Implement maintenance procedures

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- improve the existing organisational maintenance procedures of one piece of ICT equipment and one piece of ICT software, on separate occasions.

In the course of the above, the candidate must:

- identify resource requirements with in-house resources, external resources and third-party organisations
- develop and update service level agreements (SLAs).

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- client responsibilities and expectations including:
  - role of stakeholders
  - degree of stakeholder involvement
  - business scheduling requirements
- features and capabilities of industry standard equipment and software
- features and purpose of diagnostic tools
- change management tools that maybe used in implementation maintenance procedure activities
- help desk and maintenance practices and procedures
- organisational quality assurance practices
- ICT systems functionality and performance levels.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- ICT equipment and software packages
- SLAs
- external organisations and third-party suppliers
- internet connectivity
- ICT equipment capable of online and offline research, such as a computer
- technical helpdesk environment
- technical manuals and tools.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS439 Analyse ICT system capacity and implement enhancements

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to monitor and assess the current and future capacity requirements of Information and Communications Technology (ICT) systems, plan future capacity enhancements and install identified capacity enhancements.

It applies to experienced individuals who work under limited supervision and use technical and specialised knowledge to undertake strategic planning and forecasting initiatives.

No licensing, legislative, or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Analyse existing system capacity	1.1 Access required ICT system capacity testing hardware and software 1.2 Review existing ICT system capacity configuration information 1.3 Investigate ICT system workload and analyse effect on capacity according to organisational procedures 1.4 Examine and analyse ICT system capacity issues fault logs according to organisational procedures 1.5 Discuss and review ICT system capacity issues with users 1.6 Examine service level agreement (SLA) to determine

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ELEMENT	PERFORMANCE CRITERIA
	agreed-upon capacity standards and benchmarks 1.7 Document information and ICT system capacity analysis according to organisational guidelines
2. Determine and develop future system capacity requirements	2.1 Gather ICT system capacity requirements data 2.2 Organise, analyse and evaluate ICT system capacity requirements data 2.3 Develop ICT system forecast workload 2.4 Compare and evaluate existing workload against forecast workload 2.5 Estimate required resources and equipment for ICT system capacity requirements 2.6 Undertake financial analysis for ICT system capacity requirements 2.7 Organise and document ICT system capacity requirements according to organisational procedures 2.8 Prepare ICT system capacity requirements report 2.9 Present report to required personnel and seek feedback
3. Plan implementation of system capacity enhancements	3.1 Confirm ICT system capacity requirements 3.2 Prioritise and plan task implementation 3.3 Confirm availability of requirements and access required ICT system enhancement hardware and software 3.4 Document and submit implementation plan to required person and seek approval
4. Implement system capacity enhancements	4.1 Install ICT system capacity enhancements according to installation procedures, organisational procedures and implementation plan 4.2 Measure and assess increase in capacity and performance 4.3 Assess whether capacity requirements have been met according to organisational procedures, SLA standards and benchmarks 4.4 Update ICT system capacity documentation according to organisational procedures
5. Monitor ongoing capacity requirements	5.1 Implement and maintain a performance database 5.2 Monitor and assess impact of ICT system capacity enhancements 5.3 Review benchmarks and performance with work team 5.4 Implement capacity enhancements and updates of benchmarks as required

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Reading	• Researches and evaluates technical and non-technical information and numerical and financial data from a range of sources to determine benchmarks and performance indicators
Writing	• Accurately records information and numerical data and prepares documentation using clear and accurate language to convey explicit information, requirements and recommendations
Oral communication	• Articulates ideas and strategies using effective communication techniques and industry standard technical language intended for audience and environment
Numeracy	• Uses mathematical equations to calculate, compare and estimate numerical and financial data required for forecasting and planning activities
Teamwork	• Selects and uses required conventions and protocols when communicating with users, co-workers and others in a range of work contexts • Collaborates with others to achieve shared goals
Problem solving	• Applies analytical processes to resolve technical or conceptual problems
Self-management	• Takes responsibility for planning, sequencing and prioritising tasks and own workload
Technology	• Uses main features and functions of digital tools to complete work tasks

Unit Mapping Information

Supersedes and is equivalent to ICTSAS417 Undertake ICT system capacity planning.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS439 Analyse ICT system capacity and implement enhancements

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- monitor and assess the current and future capacity requirements and plan and implement capacity enhancements for at least two different ICT systems, on at least two separate occasions.

In the course of the above, the candidate must:

- access required hardware and software for testing and enhancement
- review ICT system configuration information, workload and fault logs
- document and analyse capacity requirements, with realistic and achievable forecasts, including financial requirements.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- ICT system functionality and operating levels
- key features of:
  - component performance management
  - industry accepted hardware and software products
  - financial analysis
  - client business domain
  - performance monitoring tools
  - quality assurance practices with regard to proposed ICT capability enhancements
  - SLAs relating to proposed ICT capability enhancements
  - role of stakeholders and the degree of stakeholder involvement
- organisational procedures including:

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- ICT system workload analysis
- ICT system fault log analysis
- ICT system capacity analysis documentation procedures
- ICT system requirement documentation
- ICT system capacity enhancement installation
- assessment of ICT system enhancements.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- tools, equipment, materials, hardware and industry software packages required for ICT system capacity analysis and enhancement implementation
- live system
- SLAs
- fault logs
- users and required person.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS440 Monitor and administer security of ICT systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to monitor security functions of an Information and Communications Technology (ICT) system and administer security measures.

It applies to experienced individuals who, while working under a level of supervision, have responsibility in a frontline technical support capacity to ensure organisational standards are met and apply technical and specialised knowledge to maintain the security of an ICT system.

No licensing, legislative, or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Access and control user accounts	1.1 Access ICT system according to organisational procedures 1.2 Modify default and previously created user settings according to security policies 1.3 Access and review logs and audit reports and identify security threats 1.4 Check the requirements for displayed legal notices at log on are aligned to organisational requirements 1.5 Check strength of passwords using required utilities 1.6 Review organisational guidelines for password complexity and tighten if required

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ELEMENT	PERFORMANCE CRITERIA
	1.7 Review password guidelines within other internal departments 1.8 Check for and control legislation compliance breaches 1.9 Identify and resolve ICT system security
2. Secure file and resource access	2.1 Review inbuilt security features of file and resource access 2.2 Review and develop file security categorisation scheme 2.3 Monitor and record security threats to ICT system 2.4 Implement file and resource virus checking process 2.5 Schedule ICT system components virus checking process 2.6 Investigate and implement inbuilt and additional encryption facilities
3. Recommend and administer security measures	3.1 Perform user spot checks according to organisational policies and procedures 3.2 Document areas and instances where security procedures are not being followed 3.3 Create security adherence recommendations 3.4 Prepare and present audit report and recommendations to required personnel 3.5 Obtain recommended changes approval 3.6 Implement approved changes
4. Finalise ICT system security procedures	4.1 Conform all ICT system security checks have been performed 4.2 Review implemented security changes 4.3 Evaluate and report on system security procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Reading	• Researches and analyses technical and non-technical information and system data from a range of sources to determine requirements and complete required actions
Writing	• Prepares complex workplace documentation detailing information, requirements and recommendations using appropriate structure, layout and technical programming language
Oral Communication	• Obtains information by listening and questioning and participates in verbal exchanges with a range of personnel

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	using detailed and clear language to contribute information and express requirements and recommendations
Numeracy	• Uses mathematical equations to calculate and compare system and numerical data to determine required actions and prepare reports and schedules
Teamwork	• Selects and uses required conventions and protocols when communicating with others in a range of work contexts
Problem solving	• Applies analytical processes to resolve technical or conceptual problems
Self-management	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes
Technology	• Uses main features and functions of digital tools to complete work tasks

Unit Mapping Information

Supersedes and is equivalent to ICTSAS418 Monitor and administer security of an ICT system.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS440 Monitor and administer security of ICT systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- monitor and administer security functions of at least two different ICT systems.

In the course of the above, the candidate must:

- access and modify user settings to satisfy security policies, including:
  - legal notices at logon
  - password strength
  - email and resource access
- review user accounts for security control
- identify security features in operating environment
- monitor threats to the network using:
  - review logs and audit reports
  - third-party diagnostic tools
  - implementation of virus checking process and schedule
  - preparation of an audit report and recommendations
  - security spot checks.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry accepted hardware and software products related to IT security
- privacy issues and legislation with regard to IT security
- risk analysis processes for system security
- role of users in setting security
- password strength guidelines

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- security technology and systems technologies
- client business domains, including:
  - client organisation structure
  - business functionality.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- special purpose tools, equipment and materials required for the monitoring and administration of security functions of ICT systems
- industry software packages
- an environment with an existing security system in place
- security policy for security systems
- industry and organisational standards
- a live ICT system.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS441 Support ICT system software

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to support Information and Communications Technology (ICT) system software through the management of ICT system files, management of ICT system security, ICT system backups and ICT system restores.

It applies to individuals who provide assistance and use technical and specialised knowledge and a systematic approach to tasks to ensure organisational standards are met in maintaining operating systems.

No licensing, legislative, or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Access and maintain ICT system software	1.1 Access ICT system software according to organisational procedures 1.2 Evaluate ICT system effectiveness against organisational requirements and benchmarks and determine if maintenance activities should be commenced 1.3 Identify peak periods and performance problems 1.4 Monitor ICT system data levels 1.5 Troubleshoot ICT system with required ICT system tools as needed 1.6 Monitor and retune ICT system

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ELEMENT	PERFORMANCE CRITERIA
2. Set up and manage ICT system files	2.1 Access ICT system files 2.2 Evaluate ICT system requirements and monitor appropriateness of file and folder structures 2.3 Create required administration file and folder structures 2.4 Set up security and access and sharing of file system according to ICT system requirements 2.5 Test file system and confirm required access to user groups 2.6 Write logon scripts and custom utilities and programs according to organisational guidelines 2.7 Document file system created according to organisational guidelines
3. Monitor and manage ICT system usage and security	3.1 Monitor user access against user access levels 3.2 Review user and data security requirements 3.3 Identify virus protection requirements of network according organisational requirements 3.4 Scan ICT system for viruses and remove detected viruses 3.5 Determine data exposure risks and formulate required prevention and recovery processes 3.6 Implement backup and to restore services system 3.7 Document disaster recovery procedures according to organisational requirements
4. Carry out ICT system backup and restore ICT system backup	4.1 Confirm backup schedule meets organisational requirements 4.2 Complete ICT system backup according to organisational, scheduling and system requirements 4.3 Provide and use a secure off-site location for storage of backup media 4.4 Complete required ICT system restores and system recovery according to organisational guidelines 4.5 Optimise restored ICT system according to organisational requirements 4.6 Record ICT system backups and restores according to organisational requirements
5. Finalise ICT system software support procedures	5.1 Confirm all ICT system support procedures have been performed 5.2 Review implemented ICT system changes 5.3 Evaluate and report on ICT system support procedures

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Reading	• Interprets and analyses technical and non-technical information and system data from a range of sources to determine requirements and complete required actions
Writing	• Prepares required workplace documentation using appropriate structure, layout and technical language
Numeracy	• Uses mathematical equations to calculate and compare system and numerical data to determine required actions and to prepare reports
Problem solving	• Applies analytical processes to resolve technical or conceptual problems
Self-management	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes
Technology	• Uses main features and functions of digital tools to complete work tasks

Unit Mapping Information

Supersedes and is equivalent to ICTSAS419 Support system software.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS441 Support ICT system software

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- support ICT system software by completing all of the following, on two separate ICT systems:
  - ICT system file management
  - ICT system security management
  - ICT system backup
  - ICT system restore.

In the course of the above, the candidate must:

- prepare documentation and reports
- access required ICT system software and files
- maintain system performance benchmarks
- use a wide range of features and system tools.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- system software and system tools
- reasons for system performance problems, such as:
  - system utilisation
  - file and disk structure
  - performance reports and files
- system data levels
  - system performance indicators
  - predetermined system performance standards

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- key features of change management systems
- the client business domain
- quality assurance practices with regard to supporting system software
- simple programming constructs
- vendor products and trends in product development.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- special purpose tools, equipment and materials for ICT system support
- industry software packages
- organisational performance benchmarks
- live system
- client user requirements.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS442 Provide first-level remote help desk support

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to resolve first-level user support issues and change requests remotely for a range of Information and Communications Technology (ICT) systems.

It applies to experienced individuals who, while working under a level of supervision, have responsibility in a frontline technical support capacity to exercise discretion and judgement using required knowledge to provide assistance and remote help desk support to clients.

No licensing, legislative, or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine the user support issue	1.1 Determine eligibility status of individual experiencing user support difficulty against organisational guidelines 1.2 Clarify user support difficulty and change request with client 1.3 Confirm nature of user support difficulty and change request with client
2. Identify the ICT system being used by the client	2.1 Identify software, hardware, network connection and application being used by client 2.2 Identify expected client outcome and stage of issue resolution 2.3 Step client back to beginning of resolution process

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ELEMENT	PERFORMANCE CRITERIA
3. Confirm resolution of user support issue and change request	3.1 Determine, describe and eliminate factors that created user support issue and permit it to recur 3.2 Explain and guide client through complete recovery and resolution process 3.3 Provide handling and resolution instructions to client 3.4 Escalate change request where required 3.5 Document changes where required
4. Finalise client support procedures	4.1 Confirm resolution of issue and obtain client satisfaction with client according to client service policy 4.2 Inform client of additional support and services available, according to the organisation's client service policy 4.3 Provide client with additional product and service information according to organisation's sales promotion requirements 4.4 Complete client contact records according to client service requirements

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Reading	• Interprets and analyses technical and non-technical information from a range of sources to determine requirements and complete required actions
Writing	• Accurately records information and numerical data and prepares documentation using clear and accurate language to convey explicit information, requirements and recommendations
Oral Communication	• Articulates ideas and strategies using effective communication techniques and industry standard technical language intended for audience and environment • Explain the processes involved with resolving client problems in a logical manner, using plain English
Teamwork	• Selects and uses required conventions and protocols when communicating with clients in a range of work contexts
Numeracy	• Uses mathematical equations to calculate costs and estimate time in providing client services and in determining required actions

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Self-management	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes
Problem solving	• Applies analytical processes to resolve technical or conceptual problems
Technology	• Uses main features and functions of digital tools to complete work tasks

Unit Mapping Information

Supersedes and is equivalent to ICTSAS420 Provide first-level remote help desk support.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS442 Provide first-level remote help desk support

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- resolve one first-level user support issue of an ICT system and one first-level change request of a different ICT system, for two separate clients.

In the course of the above, the candidate must:

- identify nature of the user difficulty and determine required support
- identify ICT system being used by client, such as:
  - software
  - hardware
  - network connection
  - application
- resolve first-level user support difficulties remotely
- demonstrate customer service skills
- engage with the client using a range of communication skills, such as:
  - active listening
  - questioning
  - clear and concise language
  - logical, plain English
- obtain client feedback and document problem resolution.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- customer service policies and procedures
- contexts where escalation procedures are required

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- organisational guidelines, including user support services
- work health and safety (WHS) procedures related to:
  - work environment
  - organisational requirements
- user support policies of limited complexity related to known or basic options.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- client issues and change requests
- remote helpdesk hardware and software
- communications hardware
- customer service policies
- user support policies
- escalation procedures.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS443 Support operating system users and troubleshoot applications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to support users who run operating systems (OS) in a corporate or home environment and to troubleshoot applications on a range of Information and Communications Technology (ICT) devices.

It applies to individuals who provide frontline support to users and apply technical and specialised knowledge to fault finding and problem solving.

No licensing, legislative, or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to support OS users	1.1 Access OS according to organisational procedures 1.2 Determine support requirements with OS users 1.2 Analyse OS according to organisational procedures 1.3 Determine support capacity and refer to required personnel if outside scope of ability 1.4 Document intended OS support
2. Install, configure and troubleshoot applications and	2.1 Install client application 2.2 Configure and customise client application within user environment and according to user specifications

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ELEMENT	PERFORMANCE CRITERIA
security	2.3 Identify application problems and security issues 2.4 Troubleshoot application according to organisational procedures 2.5 Troubleshoot security permission problems 2.6 Manage application security settings
3. Implement OS support procedures	3.1 Determine user OS issues and problems 3.2 Research solutions to user OS issues and problems 3.3 Recommend user OS solutions 3.4 Implement OS solutions according to organisational procedures 3.5 Resolve OS issues and problems according to organisational procedures
4. Finalise OS support and troubleshooting procedures	4.1 Confirm all OS system support procedures have been performed 4.2 Review implemented application changes and installations and OS support outcomes according to organisational procedures 4.3 Evaluate and report on support procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Reading	• Researches and analyses complex technical and non-technical information from a range of sources to determine requirements and complete required actions
Writing	• Accurately records information and numerical data and prepares documentation using clear and accurate language to convey explicit information, requirements and recommendations
Oral Communication	• Confirms information and articulates ideas using effective communication techniques and industry standard technical language intended for audience and environment
Numeracy	• Uses mathematical equations to calculate and compare numerical data to solve problems and determine required actions
Teamwork	• Selects and uses required conventions and protocols when communicating with clients in a range of work contexts

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SKILL	DESCRIPTION
Problem solving	• Applies analytical processes to resolve technical or conceptual problems
Self-management	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes
Technology	• Uses main features and functions of digital tools to complete work tasks

Unit Mapping Information

Supersedes and is equivalent to ICTSAS421 Support users and troubleshoot desktop applications.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS443 Support operating system users and troubleshoot applications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- provide support to two different OS users, with different support requirements, on separate occasions
- install and troubleshoot applications on at least two different ICT devices.

In the course of the above, the candidate must:

- install, configure and troubleshoot applications
- manage security issues associated with OS and applications
- provide user support to users of OS
- customise computer applications
- anticipate and respond to a range of security incidents.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- organisational procedures, including:
  - application troubleshooting
  - OS access and analysis
  - OS solution implementation
  - OS issues and problem resolution
- sources of OS patches
- OS and application security incidents
- typical systems and procedures of user support.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- required OS installation storage and recovery software
- devices with application errors
- samples of operating system patches
- stand-alone or networked ICT device.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS444 Repair operating systems boot up procedures

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to repair boot up procedures in a variety of operating systems (OS).

It applies to individuals who use technical and specialised knowledge and a systematic approach to troubleshooting and fault finding.

No licensing, legislative, or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to repair OS	1.1 Review organisation's technical support procedures and confirm client requirements 1.2 Access faulty OS according to organisational procedures 1.3 Examine OS file and root structure according to organisational procedures 1.4 Identify profile information and currency of OS 1.5 Identify and confirm help desk structure for assistance if required 1.6 Examine kernel file structures
2. Analyse OS boot up processes and repair	2.1 Observe boot process according to task requirements 2.2 Compare and contrast features of faulty OS boot up with fully

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ELEMENT	PERFORMANCE CRITERIA
	functional OS boot up according to organisational procedures 2.3 Analyse and evaluate boot up procedures according to organisational procedures 2.4 Evaluate boot files 2.5 Determine boot up procedure problems 2.6 Identify boot up procedure solutions 2.7 Implement boot up procedure solutions according to organisational procedures 2.8 Test implemented solution effectiveness 2.9 Document OS boot up repair according to organisational procedures
3. Finalise OS boot up repair processes	3.1 Confirm all OS boot up repair procedures have been performed 3.2 Review implemented boot up repair and OS support outcomes 3.3 Evaluate and report on support procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Reading	• Interprets and analyses complex technical information from a range of sources to determine requirements and complete required actions
Writing	• Records information in the required format, using accurate spelling and grammar and terminology and conventions specific to requirements
Oral Communication	• Articulates ideas and strategies using effective communication techniques and industry standard technical language intended for audience and environment
Numeracy	• Uses mathematical equations to calculate and compare numerical data required for troubleshooting and problem solving
Teamwork	• Selects and uses required conventions and protocols when communicating with clients in a range of work contexts
Problem Solving	• Applies analytical processes to resolve technical or conceptual problems

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Self-management	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes
Technology	• Uses main features and functions of digital tools to complete work tasks

Unit Mapping Information

Supersedes and is equivalent to ICTSAS424 Support different operating systems.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS444 Repair operating systems boot up procedures

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- repair the boot up procedures of two different operating systems, on separate occasions.

In the course of the above, the candidate must:

- review technical support procedures with client
- evaluate the functionality of OS
- differentiate OS features, structure and currency
- analyse OS boot processes and procedures
- review and document implemented boot up repair and OS support outcomes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- organisational procedures, including:
  - OS file and root structure examination
  - OS boot up comparison procedures
  - boot up procedures
  - solution implementation for boot up procedures
  - OS boot up repair documentation
- boot process analysis of a large variety of OS
- file analysis of those required for operation
- compare the key features of a range of OS.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- stand-alone or networked operating systems
- required OS installation storage and recovery software
- drivers for connected devices
- system for boot up analysis and repair
- help desk support.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS445 Configure and troubleshoot operating system software

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to install, configure, optimise and troubleshoot operating system (OS) software to ensure organisational and client requirements are met.

It applies to experienced individuals who, whilst working under minimal supervision and in an instructional and management capacity, are required to install, configure, optimise and troubleshoot OS system software to meet organisational client requirements.

No licensing, legislative, or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify suitable operating systems	1.1 Research OS vendor sites, technical specifications and system requirements 1.2 Compare and contrast different OS according to organisational procedures 1.3 Determine licensing, hardware and security requirements 1.4 Determine OS for required operation 1.5 Provide OS recommendation to required personnel
2. Install, configure, test and optimise	2.1 Install OS according to organisational requirements

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ELEMENT	PERFORMANCE CRITERIA
operating systems	2.2 Configure OS user interface installation 2.3 Identify directory structures and demonstrate management of virtual memory 2.4 Test OS functions and operations according to organisational procedures 2.5 Optimise OS according to organisational and client requirements 2.6 Document OS installation procedures and functionality according to organisational procedures
3. Resolve operating system problems using command line options and system tools	3.1 Identify command line options and system tools 3.2 Troubleshoot OS problems according to organisational procedures 3.3 Identify and determine OS problem resolution strategies 3.4 Implement OS resolution strategies according to task requirements 3.5 Test OS problem resolution
4. Provide instruction for new operating system implementation	4.1 Confirm resolution of problems with client according to client service policy 4.2 Document changes to OS according to organisational procedures 4.3 Provide one-to-one change instruction to client and users as required 4.4 Obtain OS client evaluation and approval 4.5 Finalise OS change procedures according to organisational procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Reading	• Researches and analyses technical textual information and numeric data to source solutions and determine required actions
Writing	• Uses clear and technical language and formats required to the task to record and convey information, requirements and recommendations

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Oral Communication	• Articulates ideas and strategies using effective communication techniques and industry standard technical language intended for audience and environment • Provides instructions to clients on how changes made to operating systems affect the operating system functionality
Initiative and enterprise	• Takes personal responsibility for following explicit and implicit policies, procedures and technical requirements
Teamwork	• Selects and uses required conventions and protocols when communicating with clients and others in a range of work contexts
Problem solving	• Applies analytical processes to resolve technical or conceptual problems
Self-management	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes
Technology	• Uses main features and functions of digital tools to complete work tasks

Unit Mapping Information

Supersedes and is equivalent to ICTSAS425 Configure and troubleshoot operating system software.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS445 Configure and troubleshoot operating system software

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- install, configure, optimise and troubleshoot two different operating systems, on two separate occasions, each for a different organisation.

In the course of the above, the candidate must:

- improve system performance with minimum disruption to clients
- identify OS problems and resolve using command line options and system tools.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- requirements of different operating systems
- architecture of technical systems
- industry accepted hardware and software products
- functions and features of the OS used by the organisation
- OS resolution strategies, including:
  - command line options
  - system tools
- installation and configuration of systems software including:
  - organisational requirements for OS software
  - prerequisites for system software installation
  - set-up and configuration procedures
  - software packages supported by the organisation
  - system’s functionality
  - system’s diagnostic software

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  - vendor specifications and requirements for installation
- organisational procedures, including:
  - OS comparison and contrast methods
  - OS functionality and operation testing
  - OS installation procedure documentation
  - OS troubleshooting procedures
  - OS change documentation
  - OS change procedures.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- industry accepted devices where OS installations can be performed
- OS software
- command line options and system tools
- technical documentation
- organisational documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS446 Fault find and troubleshoot ICT equipment, hardware and software problems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to troubleshoot Information and Communications Technology (ICT) equipment, hardware and software problems and apply systematic processes to fault finding across a wide range of ICT disciplines.

It applies to individuals who, whilst working under minimal supervision and with a level of expertise, apply a systematic approach to finding faults, troubleshooting problems and solving issues in a wide range of ICT disciplines in a small or large helpdesk environment.

No licensing, legislative, or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for fault finding and troubleshooting procedures	1.1 Develop problem resolution troubleshooting process 1.2 Obtain ICT system according to organisational procedures 1.3 Analyse and document ICT system characteristics according to organisational procedures 1.4 Identify and obtain required fault-finding tools according to organisational procedures 1.5 Identify fault finding legislation, health and safety requirements, codes, regulations and standards
2. Analyse the problem	2.1 Collect ICT system data according to organisational

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ELEMENT	PERFORMANCE CRITERIA
to be solved	procedures 2.2 Determine specificity of problem according to organisational procedures 2.3 Analyse data to determine nature and scope of problem 2.4 Determine symptoms of ICT system problems 2.5 Document analysis of problem according to organisational procedures
3. Identify a solution and rectify the problem	3.1 Test variables until problem is isolated according to organisational procedures 3.2 Confirm isolated problem has been accurately determined 3.3 Create list of probable causes 3.4 Formulate solution and create provision for rollback 3.5 Implement ICT system solution according to organisational procedures
4. Test system and complete documentation	4.1 Test ICT system to ensure problem has been solved according to organisational procedures 4.2 Record results of tests and file according to organisational procedures 4.3 Implement basic preventative maintenance techniques 4.4 Document characteristics of problem and solution according to organisational procedures 4.5 Load document to required database

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Reading	• Identifies, analyses and evaluates technical textual information and technical system data to source solutions and determine required actions
Writing	• Records information relating to issues and outcomes in a sequential manner using grammar and spelling
Initiative and enterprise	• Identifies and complies with organisational and legislative requirements
Problem solving	• Applies analytical processes to resolve technical and conceptual problems

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Self-management	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes
Get the work done	• Uses the main features and functions of digital tools to complete work tasks

Unit Mapping Information

Supersedes and is equivalent to ICTSAS426 Locate and troubleshoot ICT equipment, system and software faults.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS446 Fault find and troubleshoot ICT equipment, hardware and software problems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- apply fault finding methods to determine a problem with an ICT system, on at least two occasions, each occasion on a different ICT system
- troubleshoot and resolve problem identified on each ICT system.

In the course of the above, the candidate must:

- identify, analyse and document fault finding method and faults
- develop and document troubleshooting process
- obtain and use suitable tools and equipment
- systematically test variables until problem is isolated.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- ICT systems, including:
  - ICT equipment (including peripheral devices)
  - hardware
  - software
  - operating systems
- organisational procedures, including:
  - fault finding, troubleshooting, analysis and test recording documentation
  - fault finding tool gathering and use procedures
  - ICT system data collection procedures
  - variable and system testing procedures
  - solution implementation procedures

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  - fault finding test filing procedures
- client support and maintenance practices
- industry accepted hardware and software products
- system's functionality characteristics
- change management tools that may be used for fault finding and troubleshooting ICT equipment, hardware and software problems
- key features of quality assurance practices, including locating and troubleshooting ICT:
  - equipment faults
  - hardware faults
  - software faults
  - operating system faults
- change control procedures of the organisation
- range of trouble shooting methodologies and system testing tools
- symptoms of faulty ICT equipment and probable causes of problems
- basic preventative maintenance techniques
- legislative, regulatory, standards and codes of practice that impact on the ICT service sector.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- equipment, hardware, software and systems to be diagnosed
- diagnostic and fault-finding tools
- technical and system documentation
- organisational requirements for documenting solution.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS506 Update ICT system operational procedures

Modification History

Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to assess, update and document the operational procedures required to use the information and communications technology (ICT) system.

It applies to individuals who apply technical and specialised knowledge and systematic approaches to documentation in a range of ICT related areas.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	**PERFORMANCE CRITERIA**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Assess technical and user documentation	1.1 Review current versions of technical and user documentation 1.2 Compare accuracy of technical and user documentation with current system functionality 1.3 Identify and document inaccuracies in the documentation
2. Update procedures	2.1 Determine operational procedure requirements using review outcomes 2.2 Develop or update operating procedures for the system

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ELEMENT	PERFORMANCE CRITERIA
	2.3 Submit proposed operating procedures to appropriate person
3. Update documentation	3.1 Review feedback and make appropriate changes 3.2 Update technical and user documentation to incorporate changes 3.3 Submit technical and user documentation to appropriate person for final approval 3.4 Distribute technical and user documentation as agreed with appropriate person

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.3, 3.1	• Interprets and analyses textual information and data to compare accuracy of content documentation and determine necessary actions
Writing	1.3, 2.2, 3.1, 3.2	• Develops material containing specific requirements using clear and technical language • Organises content and version control in a manner that supports the purpose of the document
Numeracy	1.1, 1.2	• Accurately interprets, analyses and documents numerical and technical system data
Interact with others	2.3, 3.3, 3.4	• Uses a variety of relevant communication tools and strategies in building and maintaining effective working relationships
Get the work done	1.2, 2.1, 2.2, 3.1, 3.3, 3.4	• Plans strategic priorities and outcomes within a flexible, efficient and effective context in a diverse environment exposed to competing demands • Gathers and analyses data and seeks feedback to improve plans and processes • Addresses complex problems involving multiple variables, using formal analytical, lateral thinking techniques, experience and knowledge to focus in on the root cause

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTSAS506 Update ICT system operational procedures	ICASAS506A Update IT system operational procedures	Updated to meet Standards for Training Packages. Minor edit to the competency title.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS506 Update ICT system operational procedures

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- analyse system functionality
- review and update technical and user documentation for at least TWO systems or occasions
- develop procedures to operate systems.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe the client business domain
- explain current business practices related to preparing reports
- compare and contrast the key features and capabilities of current industry accepted hardware and software products
- describe documentation standards and tools
- discuss the role of stakeholders and the degree of stakeholder involvement.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the systems administration and support field of work, and include access to:

- special purpose tools, equipment and materials
- industry software packages
- system or project related documentation

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- staffing resources
- documentation tools.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS521 Perform integration tests

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Application

This unit describes the skills and knowledge required to ensure that the components of the system operate together to the expected standard.

It applies to experienced development staff who are responsible for ensuring that components function correctly when combined so as not to impact availability or user experience.

No licensing, legislative, or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for test	1.1 Prepare and initialise test environment and select testing tools according to the test plan 1.2 Review results of earlier component testing and identify critical issues to be considered in test scripts 1.3 Prepare integration tests and document expected test results according to organisational test procedures 1.4 Review expected test results against acceptance and test criteria and earlier component testing and correct discrepancies

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	1.5 Perform static tests of each point of integration and verify correctness of each integration test according to test plan
2. Conduct test	2.1 Run test scripts and document results against software life cycle model 2.2 Compare and document test results to expected test results on completion of each integration test
3. Analyse and classify results	3.1 Summarise and classify test results and highlight areas of concern according to organisational test procedures 3.2 Compare test results against system specifications, and acceptance and test criteria and prepare test results report 3.3 Notify contact in operations of completion of testing and communicate implications according to the test plan 3.4 Seek, obtain and incorporate feedback from superior on test results report, and log comments and gain required signatures 3.5 Agree next actions with superior based on test results report and incorporate into test results report 3.6 Finalise test results report according to organisational test procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	**Description**
Reading	• Analyses and evaluates textual and numerical information from a range of documentation to determine required action
Writing	• Accurately records information and system data using required format, terminology and conventions specific to requirements • Prepares reports using concise language and correct spelling and grammar to convey explicit information, requirements and recommendations
Oral Communication	• Uses clear and accurate language and inclusive and collaborative techniques to convey and obtain information from a range of personnel
Numeracy	• Uses mathematical equations to calculate, compare and evaluate numerical test data to determine required actions
Interact with	• Identifies and uses appropriate conventions and protocols when communicating with colleagues and stakeholders

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others	
Get the work done	• Develops plans to manage relatively complex routine and non-routine tasks with an awareness of how they might contribute to broader strategy and goals • Uses problem solving techniques in analysing required outcomes to perform integration tests • Uses digital technologies to manage information and communications technology (ICT) operations

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTSAS521 Perform integration tests	ICTSAS514 Perform integration tests	Edits to performance criteria to clarify intent. Updates to assessment requirements.	Equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS521 Perform integration tests

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements and performance criteria of this unit; including evidence of the ability to:

- On two occasions using one or more system:
  - prepare and initialise a test environment
  - construct integration tests addressing memory leakage, global name-space pollution and static variables
  - conduct static tests of integration points including the use of arguments, positional parameters and return values
  - adjust test scripts according to results of earlier component testing
  - conduct tests according to test scripts using appropriate test tools, integration standards and quality benchmarks
  - determine whether components operate according to specifications
  - analyse and classify test results
  - prepare and finalise test results report including gaining approval from superior

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

- Key features of two programming languages
- Features and processes of automated test tools
- Systems specifications analysis
- Features and common problems relating to the system being tested
- Key features and processes of integration testing techniques and tools, and associated advantages and disadvantages

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Assessment Conditions

Skills must be demonstrated in a workplace or simulated environment where conditions are typical of those experienced in an ICT workplace or working environment. This includes access to:

- Automated testing tools
- Acceptance and test criteria
- Test plan
- Individual contact in operations in the organisation
- Software life cycle model
- Integration standards
- System specifications
- Results of component testing
- System suitable for testing
- Organisational testing procedures including quality benchmarks and integration standards

Assessors of this unit must satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS523 Perform stress and load tests on integrated platforms

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Application

This unit describes the skills and knowledge required to plan and perform tests to assess and ensure the ability of a system to cope with expected high levels of data volume.

It applies to experienced individuals who provide specialised and technical knowledge in completing complex technical operations to ensure that a proposed system can handle anticipated loads.

No licensing, legislative, or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Create test plan	1.1 Determine and document standards for acceptance and compliance with user which meet organisational requirements 1.2 Determine and document test plan according to organisational requirements 1.3 Identify testing resources and tools meeting acceptance standards and compliance 1.4 Determine and document clear responsibilities and contact

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	points with third party suppliers 1.5 Identify and record base-system loads and level of activity against which tests will be measured according to test plan 1.6 Finalise test plan and agree with superior
2. Undertake test	2.1 Test system technology components and determine if operates to organisational requirements and system specifications 2.2 Test integrated platform and determine if operates to organisational requirements and system specifications 2.3 Document test results to according to test plan
3. Diagnose and resolve faults	3.1 Document and prioritise faults according to test results and organisational requirements 3.2 Diagnose faults and rectify according to priority 3.3 Manage problem resolution processes with third party suppliers according to project procedures
4. Update documentation	4.1 Update project and system documentation with test results 4.2 Record and present test findings to development staff

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	**Description**
Reading	• Interprets and analyses a range of textual information and numeric data from a range of technical sources to determine necessary actions
Writing	• Develops technical and procedural documentation using clear and precise language and numerical data to convey test outcomes, requirements and recommendations
Oral Communication	• Uses clear and precise language to convey and present complex technical information to a range of personnel • Uses questioning and listening techniques to confirm understanding, gain consensus on concepts and clarify responsibilities
Numeracy	• Uses mathematical equations to calculate numerical data and compare test outcomes
Interact with others	• Identifies and uses appropriate conventions and protocols when communicating with colleagues and others
Get the work	• Develops plans to manage relatively complex routine and non-routine

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done	tasks with an awareness of how they might contribute to broader strategy and goals • Uses problem solving techniques to analyse required outcomes to perform stress and load tests • Uses digital technologies to manage information and communications technology operations

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTSAS523 Perform stress and load tests on integrated platforms	ICTSAS516 Perform stress and load tests on integrated platforms	Edits to performance criteria to clarify intent. Updates to assessment requirements.	Equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS523 Perform stress and load tests on integrated platforms

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements and performance criteria of this unit; including evidence of the ability to:

- On two occasions on different systems:
  - Create a test plan including scope, objectives, specific automated tests to place high load on system and expected results and performance impacts
  - Undertake and analyse tests that include analysis of the system's ability to cope with expected high levels of data volume against standards
  - Develop documentation related to stress and load testing including third party responsibilities, processes or steps, test sequencing, and standards for acceptance
  - Identify the high data limits expected by the organisation and reflect in test plan and testing
  - Analyse test results to determine whether system and the individual components operate in the manner expected under expected conditions
  - Identify, diagnose, and rectify faults identified during testing
  - Document the test results and corrective action taken according to project standards and organisational requirements
  -

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

- Key features and processes of automated test tools
- Third party software and resource options relevant to stress and load testing
- Program design and performance characteristics
- Key features and processes of testing techniques
- System load and level of activity monitoring methods
- Tests for system and system technology components

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- Typical fault prioritisation
- Third party supplier communication and relationship management
- Organisational documentation procedures

Assessment Conditions

Skills must be demonstrated in a workplace or simulated environment where conditions are typical of those in an ICT working environment. This includes access to or availability of:

- Automated testing tools
- Individual to undertake role of user
- Individual development staff and superior in the organisation
- Organisational requirements relating to the system
- Project documentation, including templates, standards, specifications and user and technical manuals
- Business rules and expected loads
- Technical components of system including platform, software, hardware, and network
- Organisational testing procedures including standards
- System for testing

Assessors of this unit must satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS524 Develop, implement and evaluate an incident response plan

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to develop and implement an incident response plan. The results of the incident response plan must be evaluated if they affect the mission of the organisation.

It applies to individuals who apply high-level technical skills and specialised knowledge to provide broad systems administration and support functions.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to develop an incident response plan	1.1 Identify and document organisational incident response plan requirements 1.2 Identify and document incident response team services according to organisational requirements 1.3 Identify incident response plan structure according to organisational requirements 1.4 Determine and document alignment of organisation’s existing incident response plan against identified requirements 1.5 Submit documentation to required personnel, seek and respond to feedback

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ELEMENT	PERFORMANCE CRITERIA
2. Develop the incident response plan	2.1 Develop and document incident management policy according to task requirements 2.2 Create incident response plans according to organisational requirements and security policies and procedures 2.3 Develop incident handling and reporting procedures 2.4 Create incident response exercises, red-teaming activities, staffing and training requirements 2.5 Develop procedure for collecting and protecting forensic evidence during incident response procedures according to organisational requirements 2.6 Establish and document incident the response plan
3. Implement the incident response plan	3.1 Apply response actions to reported security incident according to incident response plan and task requirements 3.2 Assist in collecting, processing and preserving evidence according to requirements 3.3 Execute incident response plans, red-teaming activities and incident response exercises 3.4 Document security incident response and actions according to task requirements 3.5 Collect, analyse and report incident management measures according to task requirements
4. Evaluate incident response plans	4.1 Assess and document efficiency and effectiveness of incident response plans activities 4.2 Examine and document effectiveness of red teaming and incident response tests, training and exercises 4.3 Assess effectiveness of communication between incident response team and required internal and external organisations 4.4 Determine and document response improvement activities 4.5 Submit documentation to required personnel and obtain final task sign off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Learning	• Monitors outcomes of decisions, considering results and identifying key concepts and principles that may be adaptable in

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SKILL	DESCRIPTION
	the future
Numeracy	• Interprets, analyses and documents numerical and technical system data • Uses mathematical equations to calculate data for technical reports
Oral communication	• Uses listening and questioning techniques to confirm task requirements and relevant information using succinct language
Reading	• Analyses textual information and data to determine necessary actions
Writing	• Prepares required workplace documentation detailing processes and outcomes using cohesive language
Teamwork	• Uses a variety of relevant communication tools and strategies in building and maintaining effective working relationships • Influences and fosters a collaborative culture facilitating a sense of commitment and workplace cohesion • Understands diversity and seeks to integrate diversity into the work context for managing change, making decisions and achieving shared outcomes
Planning and organising	• Monitors and reviews the organisations policies, procedures and adherence to legislative requirements in order to implement and manage change
Self-management	• Works autonomously, making high-level decisions to achieve and improve organisational goals
Problem solving	• Develops and implements strategies that ensure organisational policies, procedures and regulatory requirements are met • Operates from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation, and identifying and addressing issues

Unit Mapping Information

Supersedes and is equivalent to ICTSAS501 Develop, implement and evaluate an incident response plan.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS524 Develop, implement and evaluate an incident response plan

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- determine incident response plan requirements, implement and analyse its application in real-world scenarios and document processes and outcomes on at least one occasion.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- key features of:
  - organisational business domain
  - industry standard workplace procedures and legislative requirements that are applicable to formulating prevention and recovery strategy
- industry standard systems engineering methodologies applicable to threat evaluation
- industry standard backup methodologies
- industry standard components of business planning process relevant to development of Information and Communications Technology (ICT) business solutions
- industry standard system functionality for an organisation.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- ICT business specifications and organisational deliverables
- information on the security environment, including required laws and legislation
- existing organisational security policies, organisational expertise and knowledge

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- security environment threats
- risk analysis tools and methodologies
- ICT security assurance specifications
- industry standard incident scenarios.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS525 Develop and conduct client acceptance tests

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to plan and conduct acceptance testing as part of a process whereby clients will determine whether to accept the system.

It applies to experienced individuals working in a range of Information and Communications Technology (ICT) environments, who apply specialised and technical knowledge in the development of strategic initiatives and in performing and organising others to complete complex technical operations.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify acceptance criteria and develop test plan	1.1 Review system requirements documentation and project plans and identify mandatory system objectives, optional criteria and conditions for system acceptance 1.2 Develop and document test plan according to organisational and system requirements 1.3 Review and validate test plan according to mandatory criteria, conditions and system objectives 1.4 Document test plan review findings and submit to required personnel 1.5 Schedule acceptance test and notify required personnel

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ELEMENT	PERFORMANCE CRITERIA
	according to organisational policies and procedures
2. Perform functional testing	2.1 Prepare test environment according to organisational and task requirements 2.2 Perform testing according to test plan and task requirements 2.3 Execute each test cycle according to test plan 2.4 Document all errors, difficulties and problems according to task requirements
3. Validate test results	3.1 Identify and document performance discrepancies and corrections according to organisational policies, procedures and timeframes 3.2 Submit documentation to required personnel and seek feedback 3.3 Respond to feedback and reschedule required code changes and modifications 3.4 Document modifications and required code changes and submit to required personnel 3.5 Obtain final task sign off from required personnel

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Numeracy	• Uses mathematical equations to calculate financial and technical data and to organise schedules • Interprets, analyses and documents numerical and technical system data
Oral communication	• Uses listening and questioning techniques to confirm testing arrangements and convey technical information using relevant industry language for intended audience
Reading	• Interprets and analyses textual information and data from a range of sources to determine necessary testing and actions
Writing	• Prepares required workplace documentation detailing test plan, findings and all problems and modifications using required language
Teamwork	• Selects, implements and manipulates communications systems, processes and practices for maximum impact • Uses a variety of relevant communication tools and strategies

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SKILL	DESCRIPTION
	in building and maintaining effective working relationships • Influences and fosters a collaborative culture and facilitates a sense of commitment and workplace cohesion
Planning and organising	• Plans strategic priorities and outcomes within a flexible, efficient and effective context in a diverse environment exposed to competing demands
Problem solving	• Gathers and analyses data and seeks feedback to improve plans and processes • Addresses complex problems involving multiple variables, using formal analytical, lateral thinking techniques, experience and knowledge to focus in on the root cause
Self-management	• Identifies and acts on issues that contravene relevant policies, procedures and legal requirements
Technology	• Uses digital technologies to manage business operations and actively investigates new technologies for strategic and operational purposes

Unit Mapping Information

Supersedes and is equivalent to ICTSAS504 Develop and conduct client acceptance test and ICTTEN504 Acceptance test new systems and equipment.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS525 Develop and conduct client acceptance tests

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop a test plan based on system requirements and acceptance criteria, undertake functional testing, and document outcomes and processes on at least one occasion.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- key features and processes of industry standard automated testing tools
- key aspects of organisational rules and standards
- organisational and user requirements
- industry standard testing methodologies used in acceptance testing.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- business requirements and organisation’s deliverables
- project documentation, including:
  - templates
  - standards
  - specifications
  - client user and technical manuals
  - test plan
- technical components of system, including:

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  - software
  - hardware
  - network
- industry standard system application required for testing
- functional test cases that satisfy required acceptance criteria.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS526 Review and update disaster recovery and contingency plans

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to analyse the impact of the system on the organisation and carry out risk analysis, disaster recovery and contingency planning.

It applies to individuals who apply a wide range of higher-level technical skills and systematic problem-solving approaches in Information and Communications Technology (ICT) related areas.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Evaluate system impact on business continuity	1.1 Identify required business critical functions and security environment 1.2 Identify required critical data and software 1.3 Assess potential impact of business risk and threats on ICT systems 1.4 Identify statutory requirements, commercial requirements and contingency requirements according to organisational requirements
2. Evaluate system threats	2.1 Identify and document internal and external business environment system threats

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Evaluate and document risk minimisation alternatives against organisational cost constraints and organisational requirements 2.3 Submit document to required personnel, seek and respond to feedback
3. Formulate prevention and recovery strategy	3.1 Evaluate and document prevention and recovery options against business specifications and cost constraints 3.2 Review industry standard operational procedures and check required risk safeguards and contingency plans are in place 3.3 Submit disaster recovery and prevention strategy to required personnel and seek and respond to feedback
4. Develop disaster recovery plan	4.1 Identify and document disaster recovery resources according to cost constraints and organisational requirements 4.2 Identify and document disaster strategy processes 4.3 Identify required cut-over criteria plan 4.4 Document disaster recovery plan and submit to required personnel and seek and respond to feedback 4.5 Obtain final task sign off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Numeracy	• Analyses, interprets and documents numerical, financial and technical system data
Oral communication	• Uses listening and questioning techniques to confirm information using relevant industry language for intended audience
Reading	• Researches and analyses textual information and technical data/specifications from a range of documentation and sources to inform the development of contingency plans
Writing	• Prepares required documentation detailing evaluation and strategy using required language and formats appropriate to the task
Teamwork	• Uses relevant communication tools and strategies in building and maintaining effective working relationships • Influences and fosters a collaborative culture that facilitates a sense of commitment and workplace cohesion
Planning and	• Demonstrates strategic planning of priorities and outcomes within

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SKILL	DESCRIPTION
organising	a flexible, efficient and effective context in a diverse environment exposed to competing demands
Problem solving	• Gathers and analyses data and seeks feedback to improve plans and processes
Self-management	• Develops and implements strategies to ensure organisational policies, procedures and regulatory requirements are met • Monitors and reviews the organisations policies, procedures and adherence to legislative requirements to implement and manage change

Unit Mapping Information

Supersedes and is equivalent to ICTSAS505 Review and update disaster recovery and contingency plans.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS526 Review and update disaster recovery and contingency plans

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop at least one contingency plan that identifies threats and minimises down time for critical business functions
- document finalised outcomes and evidence of improvements to critical business functions.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standard backup methodologies
- organisational planning process relevant to the development of Information and Communication Technology (ICT) business solutions
- organisational business domain
- industry standard disaster recovery plan strategies and components, including:
  - physical security
  - system failure, accident or sabotage (hackers)
  - denial of service
  - virus attack
  - cyber attack
  - telecommunications failure
  - contingency arrangements
- workplace health and safety (WHS), legislative and organisational requirements
- organisation’s existing systems functionality and systems engineering.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- vulnerability assessment and general definition of requirements
- acceptance test plan
- business impact analysis
- information technology security assurance specifications
- organisational statutory documentation that may impact on work task activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS527 Manage client problems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to liaise and support clients to manage and resolve problems in an Information and Communications Technology (ICT) environment.

It applies to individuals who apply high level technical and specialised knowledge in assisting clients to support, manage and resolve problems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine and review client support and resolution requirements	1.1 Diagnose potential troubleshooting and identify resolution requirements 1.2 Determine cause and analysis of the problem in accordance with client documentation and support requirements 1.3 Review organisational support and resolution documentation and identify the clients point of contact 1.4 Review service level agreement (SLA) and determine action and escalation procedures 1.5 Verify the client support and resolution requirements with relevant personnel with the client contact
2. Develop and implement client	2.1 Develop required process required for client support and resolution requirements

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ELEMENT	PERFORMANCE CRITERIA
support and resolution requirements	2.2 Implement process required for client support and resolution requirements 2.3 Maintain communication with required personnel throughout support activity 2.4 Document support activities and resolution outcomes according to client requirements
3. Evaluate client support and resolution requirements	3.1 Gather support and resolution services feedback from required personnel 3.2 Determine improvements to future support services according to organisational requirements 3.3 Submit documentation to required personnel and seek and respond to feedback 3.4 Contact client to determine satisfaction with support and resolution services provided

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Numeracy	• Interprets, analyses and documents numerical and technical system data
Oral communication	• Obtains information and feedback by effectively listening and questioning using concise language
Reading	• Analyses textual information and data to determine client support
Writing	• Prepares required documentation detailing task requirements, activities performed and their outcomes using appropriate language
Teamwork	• Uses a variety of relevant communication tools and strategies in building and maintaining effective working relationships
Planning and organising	• Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others, including required capabilities, efficiencies and effectiveness • Addresses complex problems involving multiple variables, using formal analytical, lateral thinking techniques experience and knowledge to focus in on root causes
Problem solving	• Reviews the organisations policies, procedures and adherence to legislative requirements in order to implement and manage

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SKILL	DESCRIPTION
	change
Self-management	• Takes full responsibility for identifying and considering relevant organisational protocols and requirements

Unit Mapping Information

Supersedes and is equivalent to ICTSAS509 Provide client ICT support services.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS527 Manage client problems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- determine, plan and implement ICT support and resolution services for at least two different clients problems.

In the course of the above, the candidate must:

- undertake support and resolution services, including:
  - identifying support requirements and procedures
  - liaising with client contact to determine task alignment
  - documenting support provided
  - liaising with client to obtain feedback
  - act on feedback as appropriate.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- organisations domain and business structure
- features and capabilities of industry standard hardware and software products
- quality assurance practices
- stakeholder role and degree of stakeholder involvement in organisation
- structure and purpose of service level agreements (SLAs).

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

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This includes access to:

- special purpose tools, equipment and materials required to provide client support services
- industry standard software packages
- required organisation's SLAs
- organisation's escalation procedure/s
- organisation's documentation processes and style guides.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS528 Review and develop ICT maintenance strategies

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to review and develop maintenance strategies and supporting processes to achieve continuity of Information and Communications Technology (ICT) operations and business functions.

It applies to individuals who apply specialised and technical knowledge in developing strategic initiatives and in performing or organising others to complete complex technical operations.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and analyse maintenance requirements	1.1 Identify and document business continuity system malfunction risks according to task requirements 1.2 Identify and document quantification of loss potential 1.3 Identify core business functions and determine organisational service requirements 1.4 Develop and document maintenance strategy according to organisational policies, procedures and requirements 1.5 Submit document to required personnel, seek and respond to feedback
2. Identify and analyse	2.1 Review organisational systems architecture and configuration

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ELEMENT	PERFORMANCE CRITERIA
IT system components	documentation 2.2 Conduct equipment and software audit and obtain required information as required 2.3 Determine and document required component and software warranty status according to vendor requirements 2.4 Identify and document recommendation for critical components, software and service arrangements
3. Develop service level agreements	3.1 Determine and document organisational maintenance requirements 3.2 Prepare and document service level agreements (SLAs) according to organisational requirements 3.3 Submit documentation to required personnel, seek and respond to feedback
4. Formulate maintenance strategy	4.1 Analyse and document maintenance options according to business cost constraints, risks and SLAs 4.2 Determine and document maintenance according to SLA and organisational requirements 4.3 Determine and document preventative maintenance schedule according to SLA and organisational requirements 4.4 Submit documentation to required personnel and seek and respond to feedback
5. Define organisational and supplier processes and standards	5.1 Negotiate and create reporting procedures for service requests with client and suppliers 5.2 Determine response time standards with client and suppliers 5.3 Create escalation procedures with client and suppliers 5.4 Set up support function according to business standards and procedures according to industry best practices

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Learning	• Gathers and analyses data and seeks feedback to improve plans and processes
Numeracy	• Uses mathematical equations to calculate financial and technical data and to organise schedules • Interprets, analyses and documents numerical and technical

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SKILL	DESCRIPTION
	system data
Oral communication	• Obtains information by listening and questioning using concise and relevant industry language
Reading	• Interprets and analyses technical specifications and data and textual information from a range of sources to develop maintenance strategy
Writing	• Prepares documentation analysing requirements and detailing recommendation and agreements according to organisational requirements
Teamwork	• Uses a variety of relevant communication tools and strategies in building and maintaining effective working relationships and negotiating solutions • Influences and fosters a collaborative culture to facilitate a sense of commitment and workplace cohesion
Planning and organising	• Develops plans to manage relatively complex routine and non-routine tasks with an awareness of how they might contribute to broader strategy and goals
Problem solving	• Makes high impact decisions in a complex and diverse environment, using input from a range of sources • Addresses complex problems involving multiple variables, using formal analytical, lateral thinking techniques, experience and knowledge to focus in on the root cause
Self-management	• Develops and implements strategies that ensure organisational policies, procedures and regulatory requirements are met • Monitors and reviews the organisation’s policies, procedures and adherence to legislative requirements to implement and manage change

Unit Mapping Information

Supersedes and is equivalent to ICTSAS510 Review and develop ICT maintenance strategy.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS528 Review and develop ICT maintenance strategies

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop support processes for maintaining required continuity level of Information and Communications Technology (ICT) operations and business functions for at least two different clients
- document support process and outcomes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- organisational business domain
- ICT system features that support required organisational operations and business activity
- features of industry accepted hardware and software products
- industry standard product warranty and service difficulty records
- industry standard helpdesk and maintenance practices, including:
  - general composition
  - operation of information database hardware tracking
  - software and operational issues
- functions, processes and features of data elements and data storage
- quality assurance practices, including maintenance, warranty and repair of industry standard network equipment and software
- relationships between the stakeholders and service providers.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

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This includes access to:

- industry standard special purpose tools, equipment, materials and industry software packages that may assist in the provision of ICT support services
- systems architecture documentation
- warranty documents
- organisational deliverables
- Service Level Agreements (SLAs).

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS529 Prioritise ICT change requests

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to analyse and prioritise change requests as part of managing Information and Communications Technology (ICT) systems that undergo continual change.

It applies to experienced individuals who provide technical advice, guidance and leadership in the resolution of specified problems and may have responsibility for organising others.

No licensing, legislative, or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to prioritise change requests	1.1 Identify organisational change request recording methods, policies and procedures 1.2 Identify and document change requests according to organisational policies and procedures 1.3 Classify and prioritise change requests according to service level agreements (SLAs) and organisational requirements
2. Determine priority settings	2.1 Identify organisational business continuity risks 2.2 Prioritise identified risks and determine risk reduction change implementation hierarchy 2.3 Evaluate costs, benefits and timing of change implementation according to organisational requirements

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ELEMENT	PERFORMANCE CRITERIA
	2.4 Schedule and document change analysis according to organisational requirements 2.5 Submit document to required personnel, seek and respond to feedback
3. Develop change analysis work plan	3.1 Identify change requests 3.2 Determine and document systems impact and organisation of methodology and timing of change 3.3 Determine and document change plan and include required change development resources 3.4 Submit documentation to required personnel and seek and respond to feedback 3.5 Obtain final task sign off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Numeracy	• Uses mathematical equations to calculate financial and technical data and organise schedules • Interprets, analyses and documents numerical and technical system data
Oral communication	• Obtains and responds to information and feedback from required personnel using succinct verbal language
Reading	• Interprets and analyses technical specifications and data and textual information from a range of sources to develop maintenance strategy
Writing	• Prepares documentation detailing analysis, plan and systems impact according to organisational requirements
Teamwork	• Identifies and uses appropriate conventions and protocols when communicating with colleagues and stakeholders
Planning and organising	• Develops plans to manage relatively complex routine and non-routine tasks with an awareness of how they might contribute to broader strategy and goals
Problem solving	• Uses problem solving techniques to analyse required outcomes in order to manage change to ICT systems
Self-management	• Takes full responsibility for identifying and considering relevant organisational protocols and requirements

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SKILL	DESCRIPTION
Technology	• Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world

Unit Mapping Information

Supersedes and is equivalent to ICTSAS511 Prioritise ICT change requests.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS529 Prioritise ICT change requests

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- review and prioritise change requests
- develop a change analysis work plan on at least one occasion
- document processes and finalised work plan.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- organisational business domain
- industry standard help desk and maintenance practices
- quality assurance practices relating to Information and Communications Technology (ICT) system changes
- role of stakeholders and the degree of stakeholder involvement that may impact on Information and Communications Technology (ICT) system changes activities
- features and capabilities of industry standard hardware and software products, including change management tools
- organisation’s system functionality and application
- SLAs that may impact on Information and Communications Technology (ICT) system changes activities.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- special purpose tools, equipment and materials

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- industry standard software packages
- sites on which change requests may be coordinated
- industry standard SLAs used in industry
- organisational guidelines, policies and procedures that may impact on system changes activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS602 Implement change management processes

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to apply methodologies and activities that facilitate the planning, implementation and monitoring of Information and Communications Technology (ICT) change.

It applies to experienced individuals who provide specialised technical advice, guidance and leadership in a range of areas requiring change-management in ICT systems.

No licensing, legislative, or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan ICT system changes	1.1 Determine and document organisational change procedures and conventions according to organisational requirement, policies and procedures 1.2 Identify required personnel responsible for change management policy and procedures 1.3 Evaluate current ICT system to determine changing user or business patterns 1.4 Develop and document ICT change management plan according to organisational requirements 1.5 Submit document to required personnel, seek and respond to feedback

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ELEMENT	PERFORMANCE CRITERIA
2. Identify technology system change needs	2.1 Determine industry standard ICT benchmarks 2.2 Compare identified needs against performance benchmarks and identify and document required changes 2.3 Determine and document required changes and determine impact 2.4 Submit document to required personnel, seek and respond to feedback
3. Implement change	3.1 Determine and document change schedule 3.2 Implement change management plan according to organisational policies and procedures 3.3 Identify and document new performance benchmarks 3.4 Determine and document required changes and implementation requirements 3.5 Submit document to required personnel, seek and respond to feedback
4. Monitor and review implementation	4.1 Measure change performance against new benchmarks 4.2 Submit performance results to stakeholders 4.3 Obtain sign-off on changes 4.4 Provide appropriate documentation and reporting

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Learning	• Takes a lead role in the development and facilitation of change management in an ICT environment
Numeracy	• Uses mathematical equations to calculate and compare numerical data against benchmarks and to plan and organise schedules
Oral communication	• Uses listening, questioning and presenting techniques to confirm information and promote changes using appropriate industry language
Reading	• Interprets and analyses a range of textual information and numerical data from a range of technical sources to determine necessary actions
Writing	• Prepares documentation detailing required changes, procedures and implementation according to organisational requirements using required language

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SKILL	DESCRIPTION
Teamwork	• Uses a variety of relevant communication tools and strategies in building and maintaining effective working relationships
Planning and organising	• Plans strategic priorities and outcomes within a flexible, efficient and effective context in a diverse environment exposed to competing demands • Addresses complex problems involving multiple variables, using formal analytical, lateral thinking techniques, experience and knowledge
Problem solving	• Analyses and understands context of information and uses it to develop solutions to given problems
Technology	• Uses digital technologies to manage business operations and actively investigates new technologies for strategic and operational purposes

Unit Mapping Information

Supersedes and is equivalent to ICTSAS601 Implement change management processes and ICTTEN605 Implement planned network changes with minimal impact to the customer.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS602 Implement change management processes

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify and plan Information and Communications Technology (ICT) system changes on at least one occasion.

In the course of the above, the candidate must:

- implement, monitor and review ICT system changes, including:
  - applying guidelines and policies to the change management process
  - maintaining required version control
  - maintaining compliance with existing accessibility and other policies.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- major change management principles
- functions and features of industry standard information technology systems
- internet and internetworking architecture
- principles and structure of performance benchmarking
- server access security procedures and general security issues relating to required operating system
- industry standard methods of communicating change to stakeholders
- organisation’s policies and procedures that may impact on implementing change management tasks.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- special purpose tools, software packages, equipment and materials required to implement a change management process
- international standards relating to implementing change management tasks.
- operational data
- organisation's analysis data
- organisational planning guidelines
- version control guidelines.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN202 Use hand and power tools

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to safely use hand and power tools in the workshop and on the worksite.

It applies to individuals who may work as technical staff and who may make use of safety equipment and workshop facilities.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for work activity	1.1 Identify the type of work to be performed from work instructions 1.2 Select appropriate hand and power tools for work to be performed in line with industry standards or specified approved tools for use

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ELEMENT	PERFORMANCE CRITERIA
	1.3 Set up and check tools for use according to industry approved information 1.4 Examine work environment and plan work with tools to maximise safety and productivity 1.5 Clear and clean work area to make it free of obstructions and allow clear access to tools
2. Prepare work piece for tool use	2.1 Mount, support or align work piece correctly to the tool or machine to be used 2.2 Anchor work piece securely where necessary to prevent movement
3. Operate hand and power tools	3.1 Use hand and power tools correctly according to industry and enterprise safe working practices 3.2 Use safety equipment during tool operation according to industry and enterprise safe working practices 3.3 Monitor tool operation continuously and discontinue use if abnormal operation occurs 3.4 Clean work area on completion of work
4. Maintain hand and power tools after use	4.1 Clean and store tools according to industry and enterprise safe working practices 4.2 Report abnormal tool operation or other problems according to established procedures 4.3 Perform programmed maintenance of tools according to work role 4.4 Arrange inspection of power tools according to regulatory requirements

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Description
Reading	• Interprets and understands complex information required for preparation and use of tools
Writing	• Completes workplace documentation accurately using appropriate form and vocabulary

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Navigate the world of work	• Follows legislative requirements and organisational protocols, policies and procedures relevant to own role, with particular emphasis on safety
Get the work done	• Plans and prioritises tasks, developing and implementing a work program in line with expectations and work role • Makes decisions around immediate, clearly defined tasks regarding use of tools, personal protective equipment (PPE), cleaning agents and waste disposal

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN202 Use hand and power tools (Release 2)	ICTTEN202 Use hand and power tools (Release 1)	Updates to performance criteria. Updates to template to apply consistent format between units.	Equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN202 Use hand and power tools

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- accurately interpret work orders relevant to selection and use of tools
- interpret specifications and instructions relating to materials and equipment on which tools are to be used
- prepare work environment and set up tools for safe and effective use
- perform work processes following all relevant safety requirements applying to use of hand and power tools
- monitor tool operation for correct operation during use
- inspect completed work to verify correct tool operation and use
- communicate evidence of faults and other problems
- comply with all related work health and safety (WHS) requirements and work practices.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- electrical and compressed air safety
- equipment types, characteristics, technical capabilities and limitations

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- features and operating requirements of hand and power tools
- general housekeeping policies and procedures
- industry and worksite terminology
- information required to operate equipment according to a test specification
- job safety analysis (JSA) or safe work method statement
- legislation, codes of practice and other formal agreements that impact the work activity
- manufacturer's requirements for safe operation of equipment
- materials commonly used in the industry
- safety data sheets (SDS) and materials handling methods
- operational, maintenance and basic diagnostic procedures
- common power sources
- specific WHS requirements relating to the activity and site conditions
- typical issues and challenges that occur onsite.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- sites where hand and power tools may be used
- hand and power tools currently used in industry
- relevant regulatory and equipment documentation that impact the use of hand and power tools.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN208 Use electrical skills when working with telecommunications networks

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to use electrical skills when working with analog and digital, cabling and wireless networks in telecommunications.

It applies to entry-level workers who undertake basic testing, circuit building, and evaluation of cable and wireless devices, and who may work in domestic, commercial or industrial situations.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Connect, test and verify alternating current (AC) and direct current (DC) circuitry	1.1 Identify work health and safety (WHS) issues and notify appropriate personnel 1.2 Connect a series and a parallel circuit following safe work practices 1.3 Choose appropriate test equipment and measure voltage (V), current (I) and resistance (Ω) values for the electricity in these circuits 1.4 Use calculations to verify the flow of electrical current in these circuits 1.5 Compare measured values to calculated values and determine

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ELEMENT	PERFORMANCE CRITERIA
	reasons for any variations 1.6 Measure low voltage (LV), extra low voltage (ELV) or telecommunications network voltage (TNV) and determine if values are within equipment or power supply specifications 1.7 Use appropriate test equipment to measure AC voltage (multimeter) or AC current (clamp meter) in a safe manner that does not require an LV circuit to be disconnected 1.8 Test residual current devices (RCD) or earth leakage devices to ensure they are operational prior to working with AC mains powered equipment, power supplies and tools 1.9 Evaluate results and determine probable faults as required
2. Evaluate analog and digital signals	2.1 Compare characteristics of an analog signal and a digital signal 2.2 Produce a layout using building blocks to represent a typical analog and a typical digital circuit to show different characteristics
3. Perform cable selection	3.1 Compare basic transmission characteristics, resistance, impedance and effects of signal frequency of different types of cables and select the most appropriate type to suit application 3.2 Connect two devices with a patch cable and test the connection

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Interprets textual information to inform decision-making process
Writing	• Uses industry specific language to produce technical documentation
Oral Communication	• Articulates specific concerns and issues clearly and listens to and acts on responses of others
Numeracy	• Performs basic calculations to check data, make predictions and make comparisons • Selects and uses appropriate tools to take measurements, analyse results and perform calculations
Navigate the world of work	• Follows legislative requirements and enterprise protocols, policies and procedures relevant to own role

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Skill	Description
Get the work done	• Determines job sequence and works logically and systematically to undertake clearly defined tasks • Identifies task requirements to decide on appropriate equipment and practices • Applies problem-solving processes within scope of own role to locate and resolve faults

Unit Mapping Information

No equivalent unit. Supersedes and is not equivalent to ICTTEN201 Use electrical skills in telecommunications work.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN208 Use electrical skills when working with telecommunications networks

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- use fundamental electrical principles to solve basic AC and DC electrical problems
- connect and test an AC and a DC circuit
- respond to test results found to be out of expected specifications.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- legislative requirements and enterprise protocols, policies and procedures relevant to work activity
- principles of AC and DC electricity and how it impacts telecommunications work including:
  - AC and DC electrical SI units of measurement
  - work health and safety (WHS) issues including extra low voltage and high voltage precautions
  - principles of Ohm’s law and other relevant calculations for single path circuits
  - circuit configuration
- common AC and DC faults, fault-finding techniques, and procedures for the use and care of testing equipment
- application of binary to decimal conversion and vice versa
- principles of analog and digital electronics and building blocks common to analog and digital circuits
- distinction between analog and digital signals and devices

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- electrical current, electromotive force (EMF), AC and DC electrical current
- features and applications of cable types such as single sheathed cable, unshielded twisted pair (UTP), coaxial and fibre cables
- electronic devices, cable types and their applications
- basic characteristics found in AC waveforms
- techniques to convert analog to digital and digital to analog
- characteristics of signal transmission
- common telecommunications cables and their characteristics of use and application.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- appropriate AC and DC testing equipment commonly used in telecommunications work
- manufacturer documentation and equipment
- safety personal protective equipment (PPE).

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN210 Install underground telecommunications infrastructure

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to install underground telecommunications infrastructure using civil construction skills.

It applies to cablers who install, replace or maintain large size pits, manholes, large conduits and ducts.

Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Refer to the ICT Information and Communications Technology Companion Volume Implementation Guide or the relevant regulator for details of licensing, legislative or certification requirements.

Unit Sector

Telecommunications – Telecommunications Network Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan and prepare to install underground infrastructure	1.1 Access, read, interpret and confirm work plans/specifications 1.2 Identify and confirm as required, relevant legislation, regulations, industry standards and enterprise requirements 1.3 Verify scope of work can be carried out without damaging any existing infrastructure such as underground services 1.4 Set-up worksite to ensure public and worker safety according to

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ELEMENT	PERFORMANCE CRITERIA
	enterprise requirements 1.5 Select equipment/tools for work activities and ensure their operational status 1.6 Identify, confirm and apply enterprise environmental protection requirements 1.7 Select and wear correct personal protective equipment (PPE) appropriate for work activities 1.8 Identify potential hazards, assess risks, implement risk control measures 1.9 Obtain and follow emergency procedures
2. Set out and excavate	2.1 Prepare work area and materials 2.2 Determine and apply dewatering requirements 2.3 Determine location, alignment direction, level and grade of incoming infrastructure 2.4 Set out works according to specifications 2.5 Advise plant operator of excavation requirements and monitor levels 2.5 Install trench support or batters as required 2.6 Install bedding for underground structures
3. Install underground infrastructure	3.1 Lower materials and place in position 3.2 Join conduits, manhole and ducts 3.3 Continually check alignment level and grade 3.4 Position side support and/or overlay beside pipes 3.5 Check pipeline system support structure 3.6 Monitor backfill procedure and ensure work is completed according to enterprise requirements 3.7 Construct underground infrastructure and follow test procedures to establish functionality and serviceability
4. Clean up	4.1 Clear work area and dispose of or recycle materials according to enterprise requirements 4.2 Clean, check, maintain and store plant, tools and equipment 4.3 Record and report test results on plans as-built 4.4 Update Dial Before You Dig database as required

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Interprets textual information from plans, specifications, standards and regulations to identify relevant and key information
Writing	• Documents outcomes and changes to plans using industry relevant terminology and recognised plan symbols • Prepares documentation and correspondence using clear language and correct spelling and terminology
Oral Communication	• Uses collaborative and inclusive techniques, including active listening and questioning, to convey and clarify information and to confirm understanding • Clearly explains detailed information using language, tone and pace appropriate to the audience
Numeracy	• Makes calculations appropriate for measuring site for excavation
Navigate the world of work	• Accepts responsibility and ownership for the task, and makes decisions on completion parameters and the need for coordination with others • Identifies and acts on issues that contravene relevant policies, procedures and legal requirements
Interact with others	• Uses a range of strategies and reads verbal and non-verbal signals, establishes a sense of connection and builds rapport with customers and co-workers
Get the work done	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes • Accepts responsibility for addressing less predictable problems and initiates procedures in response, applying problem solving processes in determining a solution

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN210 Install underground telecommunications infrastructure

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- apply techniques for the safe, effective and efficient installation of underground telecommunications infrastructure including:
  - problem-solving and troubleshooting techniques
  - diagnostic techniques
- complete an underground telecommunications infrastructure that meets all of the required outcomes.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- legislative, enterprise and site requirements and procedures for:
  - hazard identification, risk assessment and response
  - job safety analysis (JSA)/ job safety and environment analysis (JSEA)/safe work method statements
  - project quality measures
  - excavation/trench safety
  - confined space entry
  - site dewatering
- safety data sheets and material handling methods
- civil construction terminology
- underground telecommunications infrastructure systems and installation procedures for:

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  - manholes, large pits, conduits, ducts
  - inspection covers and minor structures
  - pipe joins
- concrete fabrication
- sedimentation and erosion controls
- worksite engineering drawings
- types, characteristics, technical capabilities and limitations of equipment related to work activity
- site isolation and traffic control responsibilities and authorities
- relevant enterprise policies and procedures.
-

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s where underground telecommunications infrastructure can be installed
- tools, equipment and personal protective equipment currently used in industry
- relevant legislation, work instructions and equipment documentation that impacts on work activity.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTTEN211 Work effectively in a telecommunications network environment

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to prepare for and work within a telecommunications network environment by familiarising oneself with the devices required to work on basic telecommunications networks and by performing information transmissions.

It applies to entry-level workers who undertake basic information transmission tasks on telecommunications networks.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Network Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Use telecommunications devices to transmit information	1.1. Verify requirements for information transmission according to work specifications 1.2. Identify and select an appropriate telecommunications device for information transmission 1.3. Determine the appropriate medium to transmit information 1.4. Transmit information to identified recipients
2. Use transmitted information	2.1 Identify and use physical mediums to transmit information across devices and cables

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Calculate physical distance characteristics that may affect each medium used 2.3 Calculate signal losses in relation to medium used 2.4 Connect test devices and record readings
3. Finalise telecommunications tasks	3.1 Complete finalisation report according to enterprise policies 3.2 Submit report to customers and stakeholders 3.3 Clean-up and reinstate site to original condition

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Uses explicit strategies to make connections between information and ideas obtained within specifications and manufacturers manuals
Writing	• Develops material for a specific audience using clear and detailed language in order to convey explicit information for findings report
Oral Communication	• Participates in a verbal exchange of information by listening and questioning
Numeracy	• Uses mental and written calculation methods as well we technological tools to problem solve
Get the work done	• Interprets textual information from technical sources to identify relevant and key information

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN211 Work effectively in a telecommunications network environment

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- determine the basic components used in two telecommunications devices
- identify at least two signal devices and two transmission mediums used in telecommunications system/s in two different situations
- identify two components used in basic switching system/s.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- transmission devices used for telecommunications and information capture including:
  - smart phones
  - computers
  - network termination devices
  - ADSL/VDSL devices
  - telephones
  - wi-fi modem/router cabinets
- mediums for telecommunications information transmission including:
  - twisted pair cable and patch chords
  - coaxial cable
  - optical fibre cable
- radio and wireless associated connectors/sockets used in transmission mediums
- radio antenna types including:
  - wi-fi omni directional antenna
- switching and cable systems including:

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- analog and digital telephone systems
- ethernet switch
- point-to-point

- common exchange equipment including:
  - rack and stack equipment.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- two types of common customer equipment
- two signal transmission mediums in use
- two different telecommunications switching equipment types
- two telephone exchange devices
- cabling products and cable used in telecommunications systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN312 Install telecommunications network equipment

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to effectively install and test telecommunications network equipment. It includes processes for checking plans, obtaining equipment, and handling equipment and supplies.

It applies to field officers, technicians or technical supervisors working for carriers, contractors or other service providers who install switching, transmission and radio networks and various transmission paths. It includes cable, optical fibre, radio, microwave and satellite telecommunications equipment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Network Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Plan for installation of telecommunications network equipment	1.1 Prepare for given work according to relevant work health and safety (WHS) and environmental requirements 1.2 Obtain access to site and assess the options for network installation 1.3 Identify existing and potential site hazards 1.4 Verify network equipment installation according to appropriate plans obtained from authorised personnel

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ELEMENT	PERFORMANCE CRITERIA
	1.5 Investigate how equipment is to be connected to existing network systems 1.6 Develop and finalise installation plans to ensure minimal workplace disruption according to relevant legislation, regulations, codes and standards 1.7 Obtain tools and test equipment required for safe work practice 1.8 Notify affected parties of possible network outage
2 Install network hardware and cabling	2.1 Install network equipment according to plan and manufacturer instructions, using safe industry practices 2.2 Install equipment or insert equipment cards and modules 2.3 Install all cables according to specifications 2.4 Confirm service interruption is within limits agreed with customer 2.5 Document all installation drawings for customer
3 Install equipment accessories	3.1 Install alarms according to instruction manuals and specifications 3.2 Install operations administration and maintenance system according to specification 3.3 Install communication facilities for operational staff according to specification, taking into account any special needs of site and operational staff 3.4 Install operator communication facilities according to needs and specifications
4 Configure and test system	4.1 Install software and configuration instructions according to system specifications as required 4.2 Test to verify system performance according to customer requirements 4.3 Recommend changes as required and confirm with customer 4.4 Record all test results
5 Clean-up worksite and complete documentation	5.1 Remove and dispose of installation waste and debris from worksite according to environmental requirements 5.2 Restore changes made to work area during installation according to customer satisfaction 5.3 Complete all installation documents and present to customer 5.4 Declare asset ready for commissioning and integration 5.5 Notify customer and obtain sign-off

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Interprets information from plans, specifications and manufacturer instruction manuals
Writing	• Uses clear and specific terminology to produce installation plans and instructions appropriate for audience • Records results of tests in required format using industry-specific language
Oral Communication	• Uses appropriate strategies to establish and maintain dialogue, notify parties of disruptions and changes to planned work
Numeracy	• Accurately interprets measurements from plans and applies results to installation plans and documents • Calibrates test equipment and calculates and compares results with specifications
Navigate the world of work	• Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements • Identifies and acts on issues that contravene relevant policies, procedures and legal requirements
Interact with others	• Follows accepted communication practices and protocols • Uses a range of strategies to establish a sense of connection and build rapport with customers and co-workers
Get the work done	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes, occasionally negotiating changes • Maintains required records and reports according to enterprise requirements • Makes routine decisions and implements standard procedures for routine tasks, using formal decision-making processes for more complex and non-routine situations

Unit Mapping Information

ICTTEN312 Install telecommunications network equipment supersedes and is equivalent to ICTTEN302 Install telecommunications network equipment.

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Assessment Requirements for ICTTEN312 Install telecommunications network equipment

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- plan for and install network hardware and cabling according to equipment or system manuals and customer specifications
- configure and test installation
- verify cable continuity
- comply with all work health and safety (WHS) and environmental requirements and work practices
- notify customer of work progress and obtain sign-off.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- WHS requirements and environmental procedures relating to the activity and site conditions
- cabling types, connectors and cabling structures
- equipment and connections to carrier infrastructure and internet service provider (ISP) technologies for single and multi-dwelling environments:
  - carrier, asymmetric digital subscriber line, very-high-bit-rate digital subscriber line, fibre network termination device (NTD), hybrid fibre coaxial (HFC) modems
- electrical and/or optical properties of installation
- network and transmission equipment principles
- power requirements and electrical safety

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- typical performance parameters and faults that may be encountered in customer equipment and related connection and transmission media
- various test equipment types suitable for tests to be made
- handling and environmental compliance for waste disposal.
-

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s where installation of telecommunications network equipment can be conducted
- network testing equipment currently used in industry
- relevant regulatory and equipment documentation that impact telecommunications network equipment installation activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN313 Work on and resolve recurrent network faults

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to use systematic and logical fault-finding techniques according to all safety requirements and work practices.

It applies to cablers and technicians who install and maintain a broad range of telecommunications networks.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Network Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for fault-finding activity	1.1 Prepare for given work according to work health and safety (WHS) and environmental requirements 1.2 Arrange access to site according to required procedure 1.3 Locate existing and potential site hazards and take appropriate action as required 1.4 Gain required information on nature of recurrent fault and network type 1.5 Select appropriate hand and power tools for work to be performed according to industry standards

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ELEMENT	PERFORMANCE CRITERIA
	1.6 Set-up and check tools for use according to industry standards
2. Conduct activities for recurrent network fault-finding	2.1 Source and analyse fault information to establish nature of fault 2.2 Select test equipment and conduct appropriate test to identify potential faults ensuring the diagnostic process does not compromise integrity of network element or system 2.3 Evaluate test results to determine relevant symptoms of recurrent fault using appropriate methods and appropriate process 2.4 Locate probable cause, type and location of recurrent fault 2.5 Rectify fault or escalate to appropriate level as required
3. Report fault-findings and solutions	3.1 Prepare report on the diagnostic procedure, fault identification and fault clearance, according to industry standards 3.2 Update fault records database 3.3 Restore worksite according to industry standards 3.4 Notify relevant parties of job completion and obtain sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Recognises and interprets technical documentation to determine important information
Writing	• Uses clear, specific and industry-related terminology to develop basic reports and in all written tasks
Oral Communication	• Liaises with customers about technical requirements using specific and relevant language • Uses listening and questioning techniques to confirm understanding
Numeracy	• Evaluates and reviews technical data for specifications
Navigate the world of work	• Appreciates implications of legal and regulatory responsibilities related to own role • Seeks advice about expectations when preparing for work
Get the work done	• Determines job priorities and works logically and systematically to undertake clearly defined and familiar tasks • Implements actions according to established procedures, making slight adjustments if necessary and addressing some unexpected

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Skill	Description
	issues • Takes responsibility for routine decision-making by selecting from a range of predetermined options in routine situations, identifying and taking some situational factors into account • Diagnoses and implements standard solutions to for an increasing number of routine problems, seeking assistance from more experienced colleagues when required • Understands purposes and specific functions of common digital systems and uses them effectively to complete routine tasks

Unit Mapping Information

ICTTEN313 Work on and resolve recurrent network faults supersedes and is equivalent to ICTTEN303 Locate, identify and rectify recurrent network faults.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN313 Work on and resolve recurrent network faults

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- discuss faults with customers and co-workers
- test telecommunications networks to identify faults
- identify and rectify recurrent faults
- conduct and report on a fault-finding task in a telecommunications network for a range of faults
- use systematic and logical fault-finding techniques in telecommunications networks and field-testing procedures according to specific workplace situations
- comply with all work health and safety (WHS) and environmental requirements and work practices.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- relevant legislation, regulations, codes, standards, enterprise guidelines, formal agreements and contracts that impact on the work activity in particular:
  - WHS requirements and environmental procedures relating to the activity and site conditions
- Ohm’s law, impedance and reactance formulas to solve alternating current (AC) electrical problems when diagnosing faults
- behaviour of faulty network elements including symptoms and impact on network
- test results and network element/system specifications

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- operation and purpose of testing equipment
- summary of telecommunications networks
- performance testing and fault-finding techniques of telecommunications networks
- systematic and logical fault-finding
- types of power sources used in telecommunications networks
- managing faults on special services (such as police stations, hospitals, customers with heart monitors).

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s on which network testing and fault-finding can be conducted
- line transmission, optical and radio measurement equipment currently used in industry
- system documentation, and other site-related documentation necessary to conduct tests and fault-finding investigations.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN315 Determine and apply technologies within a telecommunications system

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to determine and apply common technologies used for transmission of both analog and digital signals within telecommunications systems.

It applies to entry-level workers in the telecommunications industry.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Network Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Categorise and record technologies in use within a given telecommunications system	1.1 Categorise and document basic operational features of telecommunications technologies within a given system 1.2 Categorise and document features and connected devices used for coding and decoding internet signals within a given system 1.3 Categorise and record components within a local area network (LAN)
2. Record data encoding methodologies in use within a given telecommunications	2.1 Identify and document encoding technologies within a given network 2.2 Identify and document basic principles of data error correction

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ELEMENT	PERFORMANCE CRITERIA
system	and measuring techniques within a given system 2.3 Identify and verify modulation techniques used within a given system
3. Select and apply twisted pair components used within a given telecommunications system	3.1 Select twisted pair components for a given telecommunications system 3.2 Install and connect twisted pair components in the given telecommunications system 3.3 Test operations of twisted pair components 3.4 Check, document and handover system to end user
4. Select and apply coaxial components used within a given telecommunications system	4.1 Select coaxial components for a given telecommunications system 4.2 Install and connect coaxial components in the given telecommunications system 4.3 Test operations of coaxial components 4.4 Check, document and handover system to end user
5. Select and apply wireless components used within a given telecommunications system	5.1 Select wireless components for a given telecommunications system 5.2 Install and connect wireless components in the given telecommunications system 5.3 Test operations of wireless components 5.4 Check, document and handover system to end user

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Learning	• Identifies, plans and implements strategies to manage gaps in cyber security knowledge
Reading	• Analyses and consolidates information and data from sources, against defined criteria and requirements, and checks for accuracy and completeness • Recognises and interprets textual information to determine specific information about security incidents
Writing	• Develops material for a specific audience, using clear and detailed

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Skill	Description
	language in order to convey explicit information
Oral Communication	• Articulates information clearly, using specific and relevant language suitable to audience to convey recommendations and provide verbal reports • Uses listening and questioning techniques to confirm understanding
Numeracy	• Extracts and evaluates the mathematical information embedded in a range of tasks and texts
Navigate the world of work	• Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements
Interact with others	• Selects form, channel and mode of communication for a specific purpose relevant to own role
Get the work done	• Gathers and analyses data, and seeks feedback, to improve plans and processes • Explores and incubates new ideas through unconstrained analysis and critical thinking, to develop and improve the enterprise telecommunications technologies

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN315 Determine and apply technologies within a telecommunications system

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- develop a block diagram showing a telecommunications system based on copper, fibre and radio mediums
- connect relevant cable to computer components used in a local area network (LAN) environment
- locate components used in a radio/wireless transmission system
- locate components and equipment to facilitate internet operations.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- basic analog and digital theory
- basic radio-communications theory
- basic fibre optic theory
- basic principles of data encapsulation as a frame and packet of data
- basic multiplexing principles
- timing of data transmission as synchronous, plesiochronous and asynchronous formats
- basic concepts of layers within the OSI and TCP-IP Models
- work health and safety (WHS) regulations for electromagnetic and photonics telecommunications systems
- RF amplification, coax feeder and simple aerial concepts, including Yagi, parabolic dish, aerial gain, directional, omnidirectional, polarity, helical

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- components used in common LAN systems including personal computer devices, NUCs, photocopier/printer/scanners, servers, NASs, cable systems, switches, routers, wi-fi modems, and NTDs
- basic concepts and use of programming language
- basic operation of LED, laser and emerging technology sources, fibre cable and photo detector reception
- basic encoding techniques and principles used in ethernet copper cabling
- switching encountered and used in telecommunications, telephone systems, LAN, carrier/retailer
- basic types of modulation, amplitude, frequency and phase modulation used to attain efficiencies in sharing available bandwidth
- basic principles of FDM, TDM and QAM
- basic concepts and use of internet and telecommunications network related programming languages and protocols
- common internet terminology
- measuring techniques, BER, Viterbi, MER, Error rates (10-6)
- basic operation of commonly used telecommunications devices and systems.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- safety signs pertaining to electrical, electromagnetic, radio frequency and photonics systems
- equipment currently used in telecommunications systems (electrical, radio and fibre)
- cabling products and cable used in telecommunications systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN316 Conduct basic tests and analyses of telecommunications copper cabling

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to test and analyse telecommunications copper cabling using a variety of telecommunications industry test equipment.

This unit applies to technicians who conduct basic tests and telecommunications copper cabling analysis.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Network Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine cable type/s and applications in use in telecommunications system	1.1 Identify and document applications in use in telecommunications system according to relevant standards 1.2 Identify cables in use within a telecommunications system according to relevant standards 1.3 Assess balanced/unbalanced nature of type of cable system in use
2. Determine testing parameters and calibrate devices	2.1 Select most appropriate testing device and methodology for cable type 2.2 Outline testing parameters to be used for task

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ELEMENT	PERFORMANCE CRITERIA
	2.3 Locate and isolate alternative energy supply sources 2.4 Determine components to be tested 2.5 Resolve implications of system interruptions and methods for live testing with minimum system disruption 2.6 Calibrate test devices according to manufacturer and enterprise requirements
3. Conduct copper cable test/s and record results	3.1 Connect test devices to cable system 3.2 Perform and record test results 3.3 Save and retrieve test results as required 3.4 Review adverse findings and escalate according to enterprise policy and procedures
4. Report test results	4.1 Analyse and record critical test data 4.2 Develop recommendations based on test data analysis 4.3 Write up report of test results 4.4 Submit report to customer and obtain sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Learning	• Identifies, plans and implements strategies using knowledge attained
Reading	• Analyses and consolidates information and data from sources, against defined criteria and requirements, and checks for accuracy and completeness • Recognises and interprets textual information to determine specific information about security incidents
Writing	• Develops material for a specific audience, using clear and detailed language in order to convey explicit information
Oral Communication	• Articulates information clearly, using specific and relevant language suitable to audience to convey recommendations and provide verbal reports • Uses listening and questioning techniques to confirm understanding of WHS and operational testing

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Skill	Description
Numeracy	• Extracts and evaluates the mathematical information embedded in a range of technical specifications and manuals
Navigate the world of work	• Accepts responsibility and ownership for the task and makes decisions on completion parameters and the need for coordination with others • Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements
Interact with others	• Selects form, channel and mode of communication for a specific purpose relevant to own role • Ensures stakeholders are aware of WHS identified risks for task
Get the work done	• Plans strategic priorities and outcomes within a flexible, efficient and effective context, in a diverse environment exposed to competing demands • Gathers and analyses data, and seeks feedback, to improve plans and processes • Makes decisions in a complex and diverse environment, using input from a range of sources • Explores and incubates new ideas through unconstrained analysis and critical thinking, to develop and improve enterprise controls

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN316 Conduct basic tests and analyses of telecommunications copper cabling

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- select, set-up and operate test instruments for three different cable types from the following list:
  - structured cabling verification/qualification tester
  - wire mapper
  - oscillator and probe
  - spectrum analyser
  - DVB-T/S2 analyser
  - multimeter – analog and digital
  - time-domain reflectometer (TDR)
  - asymmetric digital subscriber line (ADSL)/very-high-bit-rate digital subscriber line (VDSL) test instruments
- select appropriate instrument test cables and adaptors to suit test equipment for three different cable types and:
  - determine safety of cables to be tested (i.e. live or inactive)
  - identify calibration status of selected devices
  - confirm test results are within acceptable operational parameters.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

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- relevant legislation, regulations, codes, standards, rules, guidance notes and other formal agreements that impact on work, in particular:
  - AS/CA S008:2010 Requirements for customer cabling products
  - AS/CA S009:2013 Installation requirements for customer cabling (Wiring Rules)
  - AS/NZS 1367:2016 Coaxial cable and optical fibre systems for the RF distribution of digital television, radio and in-house analog television signals in single and multiple dwelling installations
  - AS/NZS 3000:2018 Electrical installations known as the Australian/New Zealand Wiring Rules
  - AS/NZS 3080:2013 Information technology - Generic cabling for customer premises (ISO/IEC 11801:2011, MOD)
  - AS/NZS 3084:2017 Telecommunications installations – Telecommunications pathways and spaces for commercial buildings
  - National Construction Code
  - work health and safety (WHS) regulations pertaining to electrical and electromagnetic telecommunications systems including energy supply sources
- different copper cable types utilised to match transmitted and received signals
- testing concepts and parameters used by test instruments including:
  - impedance, resistance, mismatches, crosstalk, reflections, ACR, spectrum, bandwidth, modulation depth, intermodulation, signal delay, group delay, normalisation, linearity, TDR, clock, jitter, latency, ping, signal to noise ratio (SNR), simplified Fourier analysis concepts, eye patterns, PAM4 or SDI, QAM patterns/constellations, MER, BER, FEC, signal losses, noise, interference, data rates, traffic, upload/download testing, signal levels, dBs, dBm, dBµ, dBr, dBµV
- testing acronyms including expansion and meaning
- common tests utilised with each copper cable telecommunication system
- telecommunications systems utilised in the telecommunications industry including:
  - telephone/voice over internet protocol (VoIP) systems
  - mobile phones, security systems
  - closed-circuit television (CCTV) systems
  - fire protection systems
  - structured cabling systems
  - local area network (LAN) equipment, telemetry
  - equipment control and monitoring systems
  - automation control systems
  - entertainment and control systems
  - radio communications
  - wi-fi
  - radio links
  - satellite and digital television reception
  - private automatic branch exchange (PABX)
- technical standards as applicable to copper cable systems

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- test devices as applicable to copper cables in each transmission medium
- purpose and use of test results
- solid core cable versus stranded core.
-

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- safety procedures signage and personal protective equipment (PPE) for testing cable
- cabling products and cable used in telecommunications systems
- operating conditions that may be present within local industry and regional contexts
- test equipment to test cable and identify test results, including:
  - wire mapper
  - oscillator and probe
  - spectrum analyser (available in DVB analyser)
  - DVB-T/S2 analyser
  - multimeter
  - TDR (available in SC certifiers)
  - ADSL/VDSL test instruments
- typical cable types including:
  - Cat 6 UTP cable
  - Cat 6/7 STP cable
  - RG6 coaxial cable (quad shielded)
  - RG11 coaxial cable (quad shielded)
  - copper conductor ribbon cable
  - solid core cable
  - stranded core cable
- appropriate connectors for testing cables
- appropriate adaptors and test leads for test instruments and cables to be tested
- backup energy sources, including power supplies and uninterrupted power supply/source (UPS) equipment.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN317 Locate, identify and rectify telecommunications network faults

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to use systematic and logical fault-finding techniques according to safety requirements and work practices commonly used in network fault remediation.

It applies to cablers or technicians who install and maintain a broad range of telecommunications networks.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Network Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for fault-finding activity	1.1 Obtain approval for site access from customer or site owner prior to site entry 1.2 Identify existing and potential site hazards, assess risks and implement risk control measures 1.3 Determine, from documentation or discussion with appropriate personnel, work to be undertaken, including reported fault location 1.4 Prepare testing in consultation with others affected by proposed work and sequence work according to established enterprise

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ELEMENT	PERFORMANCE CRITERIA
	procedures 1.5 Obtain required materials for testing, reporting and rectification work according to established enterprise procedures and job/work ticket requirements 1.6 Obtain required tools, equipment and testing devices according to enterprise procedures and check for correct operation and safety
2. Conduct network fault-finding activities	2.1 Establish nature of fault through analysis of source and available information 2.2 Select and safely use appropriate test equipment to locate, diagnose and analyse fault 2.3 Conduct tests according to test equipment operating instructions and requirements, and ensure diagnostic process does not compromise integrity of network element or system 2.4 Identify and test for faults efficiently without damage to equipment, circuits, surrounding environment or services 2.5 Evaluate test results to determine cause of fault/s using appropriate methods and processes
3 Action identified fault/s	3.1 Rectify faults or escalate to appropriate personnel according to test results and enterprise procedures 3.2 Confirm that fault rectification meets network performance requirements/levels 3.3 Use escalation process for dealing with unexpected situations according to enterprise procedures
4. Report fault-findings and rectification	4.1 Close out fault and update records using applicable work management systems 4.2 Restore worksite according to enterprise procedures 4.3 Notify appropriate personnel when work has been completed and obtain sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description

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Skill	Description
Reading	• Recognises and interprets technical documentation to determine important information
Writing	• Uses clear, specific and industry-related terminology to develop basic reports and in all written tasks
Oral Communication	• Discusses technical requirements using specific and relevant language • Uses listening and questioning techniques to confirm understanding
Numeracy	• Evaluates and reviews technical data for specifications
Navigate the world of work	• Appreciates implications of legal and regulatory responsibilities related to own role • Seeks advice about expectations when preparing for work
Get the work done	• Determines job priorities and works logically and systematically to undertake clearly defined and familiar tasks • Implements actions according to a predetermined plan, making slight adjustments if necessary and addressing some unexpected issues • Takes responsibility for routine decision-making by selecting from a range of predetermined options in routine situations, identifying and taking some situational factors into account • Diagnoses and implements standard solutions to for an increasing number of routine problems, seeking assistance from more experienced colleagues when required • Understands purposes and specific functions of common digital systems and uses them effectively to complete routine tasks

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN317 Locate, identify and rectify telecommunications network faults

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- discuss faults with customers and appropriate personnel
- use systematic and logical fault-finding techniques and field-testing procedures according to workplace situations
- test telecommunications networks to identify a minimum of three different types of faults
- analyse test results and rectify faults for a minimum of three different types of faults
- comply with all related work health and safety (WHS) requirements and work practices
- follow direction from appropriate sources, personnel or network operators (including. operation centre, supervisor).

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- work health and safety (WHS) and environmental requirements
- basic communications testing, measuring devices and techniques including:
  - types and applications of testing/measuring devices including voltage testers, multimeters, continuity testers and insulation resistance testers
  - features of testing/measuring devices including safety, user calibration and parameter and range settings
  - test/measuring devices into a circuit
  - safety procedures

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  - circuit arrangement of test/measuring devices
  - readings
  - storage, maintenance and care of test/measuring devices.
  - Australian Standard quality assurance requirements for test equipment calibration certification
- network fundamentals for analog and digital signals including:
  - how information is carried
  - signal distortion, attenuation, reflection, noise, dispersion, latency and collisions
  - types of networks, network components and hardware
  - local area network (LAN) architecture
  - networking protocols and the open systems interconnection (OSI) model
  - network signal propagation
  - transmission control protocol/internet protocol (TCP/IP)
- basics of encoding networking signals including:
  - internet services
- performance parameters associated with copper cables, coaxial cables and optical cables including:
  - electrical circuit characteristics of voltage, current and resistance/impedance
  - open circuit, short circuit and pair continuity
  - split legs and crossed legs, contacts, earths and foreign battery
  - attenuation
  - return loss
  - insulation resistance (leakage)
  - cross talk
  - attenuation to cross talk ratio (ACR)
  - loop resistance
  - noise (impulse noise and average noise)
  - characteristic impedance
- test result compliance with required regulations, standards and/or codes for structured copper cables, coaxial and optical fibre cables including:
  - tests required to evaluate a given performance parameter
  - test equipment and leads needed to evaluate a given performance parameter
  - operation of test equipment for correct evaluation of specific cable performance parameters and to obtain accurate and reliable results
  - transmission performance requirements
- behaviour of faulty network elements, including symptoms and impact on network
- systematic and logical fault-finding
- interpretation of test results and network element/system specifications
- types of power and signal sources used in telecommunications networks.

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Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s on which network testing and fault-finding can be conducted
- line transmission and optical measurement equipment currently used in industry
- system documentation and other site-related documentation require to conduct tests and fault-finding investigations, for a minimum of three different types of faults.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN318 Inspect, clean and handle optical fibre cable and connectors

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to inspect and clean optical fibre connectors and to follow handling and placement practices for optical fibre patch leads and cables. It relates to practices necessary in the installation and patching of fibre for new or replacement cables in switching, transmission and fixed and mobile radio networks.

It applies to lines workers, technicians or jointers working for carriers and/or service providers. It also applies to work performed under direction of the relevant authority.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Network Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for fibre patching	1.1 Obtain design schematics and cut over sequence for fibre patching 1.2 Discuss and record details of activities and work schedule with relevant authority 1.3 Ensure all tools and materials required for patching are available and in good condition 1.4 Undertake an impact risk assessment, including customer impact risk according to work health and safety (WHS) guidelines for fibre patching requirements, and prepare any necessary notifications

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ELEMENT	PERFORMANCE CRITERIA
2. Prepare each connector and bulkhead for patching	2.1 Work safely and identify appropriate connector and lead type 2.2 Place fibre patch leads in support pathways avoiding pressure points, crushing and excess bending 2.3 Ensure connectors match bulkhead connectors 2.4 Remove connector dust cover and inspect connecting surface for dust or damage using the correct video adaptor optical microscope 2.5 Clean connector, as required, with recommended cleaning materials and re-inspect 2.6 Insert connector and label in accordance with customer practices 2.7 Secure cables according to manufacturer instructions and customer practices 2.8 Escalate hardware replacement problems with the relevant authority 2.9 Test replacement hardware to ensure satisfactory functionality
3. Clean-up worksite and complete administrative work	3.1 Remove waste and debris from worksite and dispose of according to environmental requirements 3.2 Recover faulty equipment and return to appropriate point for disposal or refurbishment 3.3 Complete documentation, update fault records and make recommendations according to customer practices 3.4 Notify appropriate person at the relevant authority of job completion and obtain sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Recognises and interprets technical, regulatory and enterprise documentation
Writing	• Uses clear, specific and industry related terminology to complete and update workplace documentation
Oral Communication	• Liaises with a range of personnel about technical and operational requirements using specific and relevant language • Uses listening and questioning techniques to confirm understanding

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Skill	Description
Navigate the world of work	• Complies with policies, procedures and legislative requirements relevant to own role
Interact with others	• Uses appropriate practices and protocols to communicate effectively with a range of personnel
Get the work done	• Plans, sequences and carries out tasks to meet required outcomes • Implements actions according to a predetermined plan making adjustment where necessary • Analyses task requirements to made routine decisions, taking some situational factors into account • Anticipates potential problems and prepares contingency plans • Follows required procedures when responding to problems • Understands purpose and some specific functions of common digital tools used in work contexts

Unit Mapping Information

No equivalent unit. Supersedes and is not equivalent to ICTTEN311 Inspect, clean and handle optical fibre cable and connectors.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN318 Inspect, clean and handle optical fibre cable and connectors

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- interpret, discuss and confirm required work
- obtain and check documentation, equipment and hardware for required work
- inspect fibre connectors using inspection scopes
- clean connectors using approved methods
- handle optical fibre cable and connectors to prevent damage
- complete patching according to patching schedule and under the direction of the relevant authority
- follow work health and safety (WHS) requirements and anti-static precautions
- follow required practices or contingency plan if hardware replacement is unsuccessful
- restore site to required condition
- liaise with appropriate personnel for information and reporting purposes.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- relevant legislation, regulations, codes, standards and contracts that impact on the work activity, in particular:
  - relevant safety legislation and company work practices, hazards identification, laser safety, dangerous materials handling and personal protective equipment and safety requirements for working with optical fibre cable
  - International Electrotechnical Commission (IEC) Standards acceptance criteria

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    - environmental requirements
- signal transmission in optical fibres and the impact of various contaminants on fibre connections
- relevant designs, plans and labelling conventions
- relevant equipment used for inspecting and cleaning cables and connectors
- process of inspecting and cleaning cable, connectors and equipment
- escalation processes for damaged hardware.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s suitable for inspecting and cleaning optical fibre connectors
- a range of hardware currently used in industry
- a range of general and test equipment required for testing telecommunications network hardware.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN319 Recover customer premises equipment

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to develop and enact a recovery plan and recover, package and label communications equipment including telephony, data, video, digital broadcasting and computer networks on residential, commercial or industrial installations, according to all safety requirements and work practices.

It applies to technical staff who dismantle and recover customer premises systems and equipment for new installations or upgrades of indoor or outdoor telecommunications equipment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Network Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to recover customer equipment	1.1 Notify customer to obtain site access and location details of customer equipment for recovery 1.2 Identify site hazards and notify customer to make site safe 1.3 Arrange for tools and lifting equipment as required
2. Recover customer equipment	2.1 Ensure equipment is out of operational service and disconnect from all power feeds 2.2 Dismantle equipment and peripheral units according to work health and safety (WHS) and environmental requirements with

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ELEMENT	PERFORMANCE CRITERIA
	minimal disruption to building occupants 2.3 Package and label recovered equipment and dispose of according to arranged disposal agreement
3. Complete documentation and clean-up worksite	3.1 Amend site records to show existing equipment layout 3.2 Clean-up and restore site to customer satisfaction 3.3 Collect and dispose of waste material and debris according to environmental requirements 3.4 Notify customer of job completion to obtain sign-off and present with a copy of documentation

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Recognises and interprets technical documentation, including equipment manuals and specifications
Writing	• Uses clear, specific and industry-related terminology to complete and update workplace documentation
Oral Communication	• Liaises with customers about technical requirements, using specific and relevant language • Uses listening and questioning techniques to confirm understanding
Navigate the world of work	• Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements
Get the work done	• Determines job priorities, resources and equipment, and works logically and systematically to undertake clearly defined and familiar tasks • Implements actions according to established procedures, making slight adjustments if necessary • Takes responsibility for routine decision-making by selecting from a range of predetermined options in routine situations, identifying and taking some situational factors into account • Initiates standard procedures when responding to familiar logistical problems within immediate context

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Unit Mapping Information

ICTTEN319 Recover customer premises equipment supersedes and is equivalent to ICTTEN304 Recover customer premises equipment.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN319 Recover customer premises equipment

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate, on two separate occasions, the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- discuss equipment recovery options with customer
- develop a recovery plan
- safely disconnect, dismantle and recover customer premises equipment
- package and label recovered equipment
- notify customer of progress and obtain sign-off
- apply work health and safety (WHS) requirements and work practices.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- legislation, regulations, codes, standards and other formal agreements that impact the work activity, in particular:
  - specific WHS and environmental requirements
- manufacturer requirements for safe operation of equipment
- customer premises equipment and customer premises cabling
- types of power sources used with telecommunications equipment
- nature of customer equipment recovery and the documentation required to affect recovery with stakeholders
- equipment used for recovery work
- typical issues and challenges that occur on site.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

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Access is required to:

- site/s where recovery of customer premises equipment can be conducted
- plant, tools and equipment currently used in industry
- relevant regulatory and equipment documentation that impact work activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN320 Commission an electronic unit

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to commission an electronic unit within a telecommunications environment with applications.

The commissioning may be for a new installation or upgrade of capacity or technology for an existing network or subsystem for convergence to next generation networks (NGNs).

It applies to field officers and technicians working for telecommunications carriers, other service providers and contractors.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Network Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to commission electronic unit	1.1Organise resources based on identified existing and potential site hazards 1.2 Notify customer or network operations personnel to gain site access and network specifications 1.3 Determine type and complexity of electronic unit from specifications 1.4 Verify installed electronic unit and associated cabling conform to specifications

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ELEMENT	PERFORMANCE CRITERIA
	1.5 Establish commissioning dates and confirm with all parties 1.6 Determine commissioning parameters according to specification and establish planned outage as required 1.7 Obtain test equipment and check suitability and calibration status 1.8 Produce a preliminary commissioning plan for discussion with customer according to manufacturer instructions and enterprise guidelines 1.9 Inform affected customer/s of impending action and likely timing and impact of work
2. Organise planned outages	2.1 Negotiate outage times with appropriate groups and affected customer/s to minimise disruptions 2.2 Refer to contingency plans and arrange for emergency communications as required 2.3 Notify alarm management centre of planned action 2.4 Obtain authority to proceed from relevant control centre and notify customers affected by the outage
3. Perform commissioning procedures	3.1 Program equipment or install software according to manufacturer specifications and safety requirements 3.2 Set electronic unit parameters according to manufacturer specifications and customer requirements 3.3 Set-up test equipment and conduct tests according to manufacturer specifications and industry practice 3.4 Connect and test network access facilities for correct performance 3.5 Conduct cut over according to project design and industry practice in consultation with appropriate personnel 3.6 Check remote alarm and monitoring features are functional as required
4. Finalise commissioning documentation	4.1 Update relevant databases according to enterprise and network guidelines 4.2 Notify appropriate personnel of commissioning results and work completion 4.3 Complete administrative tasks according to telecommunications industry practice and enterprise guidelines

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Recognises and interprets technical documentation and specifications to determine important information
Writing	• Uses clear, specific and industry-related terminology to develop network documentation and update workplace records, and in written communications with customers
Oral Communication	• Liaises with appropriate personnel about technical requirements using specific and relevant language • Uses listening and questioning techniques to confirm understanding
Numeracy	• Evaluates and reviews technical data to determine commissioning parameters
Navigate the world of work	• Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements
Interact with others	• Uses appropriate protocols when communicating in a range of familiar work contexts
Get the work done	• Determines job priorities and works logically and systematically to undertake clearly defined and familiar tasks, arrange site access and organise necessary equipment and resources • Implements actions according to a predetermined plan, making slight adjustments if necessary and addressing some unexpected issues • Takes responsibility for routine decision-making by selecting from a range of predetermined options in routine situations, identifying and taking some situational factors into account • Initiates standard procedures when responding to familiar problems within immediate context • Understands purposes and specific functions of common digital systems and uses them effectively to complete routine tasks

Unit Mapping Information

ICTTEN320 Commission an electronic unit supersedes and is equivalent to ICTTEN306 Commission an electronic unit.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN320 Commission an electronic unit

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills at least once each for electrical and optical equipment, and to:

- commission an electronic unit for an electrical and optical input according to specifications
- communicate effectively with stakeholders
- negotiate arrangements for commissioning
- deal with faults and problems, and provide solutions.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- electrical and optical properties to be measured
- common networking equipment
- legislation and licensing requirements surrounding installation of telecommunications equipment
- industry standards and enterprise guidelines relevant to work activity
- commissioning plans based on manufacturer and enterprise guidelines
- network operation procedures
- power requirements and electrical safety
- test equipment types
- transmission type and signals that may be encountered.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

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Access is required to:

- site/s on which installation and commissioning procedures can be conducted
- testing equipment currently used in industry
- relevant regulatory and equipment documentation that impact commissioning.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN321 Maintain an electronic system

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to inspect critical aspects of electronic systems and replace and dispose of items performing below specification and required operating levels.

It applies to individuals with the capacity to apply skills in electrical, workplace safety and power tools, working as technicians on site and from remote locations.

This work does not include major servicing of equipment or repair due to breakdowns.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Network Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to maintain system	1.1 Consult with customer or property owner to arrange site access as required 1.2 Plan schedule of routine preventive maintenance for electronic system based on recommended maintenance periods according to manufacturer handbooks and specifications 1.3 Report to appropriate person the impact of proposed maintenance activities on customer service delivery 1.4 Confirm equipment is accessible and correctly set-up for onsite preventive maintenance activities and for remote interrogation if

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ELEMENT	PERFORMANCE CRITERIA
	required 1.5 Confirm alarms are functioning according to manufacturer specifications and enterprise guidelines 1.6 Take corrective action when anomalies or faults are detected, according to enterprise guidelines and manufacturer specifications
2. Undertake preventive maintenance routines on site and remotely	2.1 Conduct preventive maintenance according to planned schedule 2.2 Report to appropriate person any instances where maintenance activities cannot be fully met or where there are identified defects outside the planned schedule 2.3 Verify equipment is functioning against expected operational parameters to confirm operational status 2.4 Take corrective action when faults are detected, according to enterprise guidelines and manufacturer specifications 2.5 Escalate to next level of support as required, where preventive maintenance activity falls outside own level of expertise 2.6 Dispose of onsite waste materials according to safe working practices and approved procedures
3. Make recommendations and update records	3.1 Record results of routine tests and make recommendations 3.2 Store records according to enterprise guidelines

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Recognises and interprets technical documentation such as equipment manuals and specifications
Writing	• Uses clear, specific and industry related terminology to develop network documentation, update workplace records, and in written communications with customers
Oral Communication	• Participates in verbal exchanges about technical and operational requirements using specific and relevant language • Uses listening and questioning techniques to confirm understanding
Numeracy	• Evaluates and reviews technical data to calculate measurements and adjustments to equipment

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Skill	Description
Navigate the world of work	• Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements
Interact with others	• Selects and uses appropriate conventions and protocols when communicating with customers and co-workers in a range of work contexts
Get the work done	• Determines job priorities and works logically and systematically to undertake clearly defined and familiar tasks and organise necessary equipment and resources • Seeks assistance from more experienced colleagues as required • Implements actions according to a predetermined plan, making slight adjustments if necessary and addressing some unexpected issues • Takes responsibility for routine decision-making by selecting from a range of predetermined options in routine situations, identifying and taking some situational factors into account • Initiates standard procedures when responding to familiar problems within immediate context • Understands purposes and specific functions of common digital systems and uses them effectively to complete routine tasks

Unit Mapping Information

ICTTEN320 Commission an electronic unit supersedes and is equivalent to ICTTEN306 Commission an electronic unit.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN321 Maintain an electronic system

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate, on two occasions, the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- identify maintenance required
- communicate maintenance details to customer/s and work associates
- undertake manufacturer preventive maintenance routines on site and remotely
- conduct tests
- interpret test results
- complete documentation according to enterprise guidelines.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- features and operating requirements across a range of electronic equipment
- legislation, codes, enterprise guidelines and other formal agreements that impact the work activity, in particular:
  - specific work health and safety (WHS) and environmental requirements
- manufacturer requirements for safe operation of equipment and correction of faults
- testing methods and performance requirements of equipment under test
- troubleshooting and repair procedures
- typical issues and challenges that occur on site and when conducting remote maintenance procedures.

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Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s suitable for maintenance of a range of equipment
- test equipment currently used in industry
- relevant regulatory and equipment documentation that impact work activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN322 Provide infrastructure for telecommunications network customer equipment

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to install supporting infrastructure for telecommunications equipment and associated hardware, including access equipment and associated media, power and monitoring equipment, and alarm systems.

It applies to field officers, installation technicians or technical supervisors working for contractors or other service providers who work on switching, transmission, radio networks and various transmission paths including cable, optical fibre, radio, microwave and satellite.

No licensing, legislative or certification requirements apply to this unit at the time of publication. However, technical work in telecommunications must only be done on extra-low voltage power levels otherwise it breaches the electrical licensing laws in Australia set within AS/NZS 3000:2018 Electrical installations known as the Australian/New Zealand Wiring Rules.

Unit Sector

Telecommunications – Telecommunications Network Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for installation infrastructure work	1.1 Notify customer to arrange site access and obtain installation plan and specifications 1.2 Conduct site survey to verify infrastructure installation requirements can be met 1.3 Identify site hazards and notify appropriate personnel to make site

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ELEMENT	PERFORMANCE CRITERIA
	safe 1.4 Notify customer of alterations required to installation design and make recommendations for possible solutions 1.5 Obtain approval for alterations and update installation plan as required 1.6 Develop installation activity schedule to minimise disruption to the workplace and according to relevant regulations and standards 1.7 Obtain material supplies, safety equipment, resources, tools and test equipment to be available as required for installation for safe work practice
2. Build customer equipment infrastructure	2.1 Prepare for given work according to work health and safety (WHS) and environmental requirements 2.2 Fit-out telecommunications closet, cabinet or equipment room to house equipment, distributors and AC/DC power systems according to design plans, manufacturer specifications, and safety and electrical standards 2.3 Build cable support systems for signal, data cabling and optical cables, including entrance facilities, intra-, and inter-building facilities according to plan and specifications 2.4 Organise installation of mains AC electrical power cabling infrastructure according to plan and specifications 2.5 Install cable distribution frames according to plan and manufacturers specifications 2.6 Install protective earthing to metal infrastructures or gas arrestors according to specifications or design
3. Install uninterrupted power supply power infrastructure	3.1 Install batteries, rectifiers and uninterrupted power supply (UPS) systems as required by specifications or design and connect according to manufacturer and WHS requirements 3.2 Test and monitor UPS battery discharge levels and obtain replacement batteries under warranty as required 3.3 Identify and rectify faults where possible or escalate according to enterprise policy
4. Restore site and complete documentation	4.1 Attach infrastructure labels and designations according to enterprise requirements 4.2 Complete inspection sheets and declare asset ready for customer sign-off documentation 4.3 Clean-up site

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ELEMENT	PERFORMANCE CRITERIA
	4.4 Notify customer and obtain sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Reads and interprets plans, specifications and other documentation from a variety of sources and consolidates information to determine requirements
Writing	• Accurately records information and prepares correspondence and documentation using clear language and enterprise formats and protocols
Oral Communication	• Effectively participates in verbal exchanges using collaborative and inclusive techniques including active listening and questioning and reading of verbal and non-verbal signals to convey and clarify information
Numeracy	• Takes measurements and use them for work layout and construction • Makes calculations appropriate for measuring and estimating materials for construction
Navigate the world of work	• Complies with explicit policies and procedures • Explores and implements, where identified, implicit expectations of policies and procedures • Ensures knowledge of legislative requirements and products is kept up to ensure compliance
Get the work done	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes • Makes routine decisions and implements standard procedures for routine tasks, using formal decision-making processes for more complex and non-routine situations • Addresses less predictable problems and initiates standard procedures in response, applying problem-solving processes in determining a solution

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Unit Mapping Information

ICTTEN322 Provide infrastructure for telecommunications network customer equipment supersedes and is equivalent to ICTTEN309 Provide infrastructure for telecommunications network customer equipment.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN322 Provide infrastructure for telecommunications network customer equipment

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate, on two occasions, the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- identify potential earthing locations, cable routes, cables support systems, data cabinets, telecommunication enclosures and distributors
- construct metal superstructure and racks
- install protective earth installations
- organise AC mains power infrastructure
- install uninterrupted power supply (UPS) backup power
- notify customer of works progress.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- cabling types, connectors and cabling structures used in telecommunications networks
- common customer telecommunications applications and related equipment
- connections to carrier infrastructure or equipment
- legislation, regulations, codes and standards for compliance relating to installation of telecommunications equipment and connection to carrier services in particular:
    - work health and safety (WHS) requirements for managing hazards on the worksite including:
        - confined spaces
        - electrical safety including the limits of electrical work as set by local electrical regulatory body
        - working at heights
        - lifting
        - materials handling

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    - physical hazards
- tools and test equipment required for an infrastructure installation
- site survey process and data that should be recorded
- environmental impacts, including options for information and communications technology (ICT) installations
- network topologies, interface and interconnect solutions
- network and transmission customer equipment likely to be encountered
- common backup UPS systems, AC mains power requirements and electrical safety for telecommunications networks
- types of warranty information for equipment supplies and contractor work guarantees
- importance of correctly labelling an installation.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s where installation of supporting infrastructure can be conducted
- plant, tools, equipment and personal protective equipment currently used in industry
- relevant regulatory and equipment documentation that impact work activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN428 Prepare design drawings and specification for telecommunications installations

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the performance outcomes, skills and knowledge required to prepare design drawings and specification for a telecommunications installation.

It applies to technical staff who are responsible for communicating installation requirements for installations, for access, building and core network installations within the Carrier Network for either carrier, commercial or industrial installations.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Gather information on existing and proposed installation	1.1 Confirm equipment installation requirements from the design brief and client 1.2 Inspect site to confirm plans where possible 1.3 Review existing plans, drawings and databases against the design brief

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ELEMENT	PERFORMANCE CRITERIA
2. Determine installation options	2.1 Assess available installation options against client requirements and relevant legislation, codes, regulations and standards 2.2 Establish and assess cost of options against client's budget 2.3 Select most suitable option based on function, cost, standards and client deployment rules
3. Prepare suitable drawings	3.1 Prepare clear and accurate installation drawings indicating proposed facilities and services 3.2 Provide drawings to relevant parties and file copies for later reference according to company policies
4. Prepare project specifications	4.1 Prepare detailed design drawings for network installation 4.2 Prepare drawings to include scheduled and non-scheduled codes to facilitate costing
5. Verify specifications with client	5.1 Verify prepared documentation with client 5.2 Obtain authorisation and approval from client to proceed according to company policy 5.3 Issue design to the field with authority to construct

Foundation Skills

Skill	Performance Criteria	Description
Reading	1.1-1.3, 2.1-2.3	• Reads and interprets plans, specifications, and other documentation from a variety of sources and consolidates information to determine requirements
Writing	4.1, 4.2, 5.1-5.3	• Prepares, edits and proofreads plans and documents to ensure clarity of meaning, and accuracy and consistency of information • Documents outcomes and changes to plans using industry-relevant terminology and recognised plan symbols • Develops procedural material for a specific audience using clear and detailed language to convey explicit information, requirements and recommendations
Oral Communication	1.1, 5.1	• Presents complex information in formal situations using clear and convincing language, tone and pace appropriate for audience and purpose

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Numeracy	2.2, 2.3, 4.2	• Applies financial modelling skills to identify, analyse and evaluate budgetary information, time durations and human resource allocations and costs
Navigate the world of work	2.1, 5.2	• Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements
Interact with others	5.2, 5.3	• Selects and uses appropriate conventions and protocols when communicating with clients and co-workers in a range of work contexts • Uses a range of strategies to establish a sense of connection and build rapport with clients and co-workers
Get the work done	1.2, 1.3, 2.1-2.3, 4.1, 5.3	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes • Makes routine decisions and implements standard procedures for routine tasks, using formal decision-making processes for more complex and non-routine situations • Addresses less predictable problems and initiates standard procedures in response, applying problem-solving processes in determining a solution • Uses familiar digital technologies and systems to access information, search and enter data, present information and communicate with others, cognisant of data security and safety

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN428 Prepare design drawings and specification for telecommunications installations	ICTTEN4243A Prepare design drawings and specification for telecommunications installations	Updated to meet Standards for Training Packages.	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN428 Prepare design drawings and specification for telecommunications installations

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- determine installation options
- produce schematics and plan drawings
- access and interpret database and knowledge systems for network information
- produce design drawings and specifications
- verify specifications with client.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- summarise carrier network practices, procedures and systems, including databases and deployment rules relating to telecommunications designs
- identify and apply legislation, codes of practice and other formal agreements (including schedule of rates and contract requirements) that impact work activity
- describe manufacturer's requirements for safe operation of equipment
- identify and document specific work health and safety (WHS) requirements relating to the activity and site conditions
- describe typical issues and challenges that occur on site
- establish and describe the various components of telecommunications plans, drawings and specifications.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- special purpose tools, equipment and materials
- sites where network installation may be conducted
- equipment currently used in industry
- relevant regulations and company policies
- cabling specifications that impact network installation activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN432 Identify requirements for customer telecommunications equipment

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to locate telecommunications equipment including telephony, audio, television and data, and to place associated cables within domestic, commercial or industrial installations. It includes planning access to new and existing infrastructure, and completing all necessary documentation.

It applies to individuals working as cablers and registered with an Australian Communications and Media Authority (ACMA) accredited registrar.

Licensing, legislative, regulatory and certification requirements apply to telecommunications earthing systems. Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Information and Communications Technology Training Package Companion Volume Implementation Guide or the relevant regulator for details about licensing, legislative or certification requirements.

Unit Sector

Telecommunications – Telecommunications Network Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to identify services required	1.1 Contact customer to arrange access to site, identify customer equipment and discuss customer requirements 1.2 Assess site-specific safety requirements and enterprise work health and safety (WHS) processes and procedures 1.3 Confirm details of proposed customer equipment

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Establish intended uses of customer equipment to assist in identifying cabling requirements 1.5 Establish cabling requirements with customer 1.6 Locate existing facilities and systems including network facilities 1.7 Verify building construction by observation and confirm accessibility 1.8 Utilise existing floor plans and integrate into subsequent documentation 1.9 Notify customer, as required, that equipment or cabling location may incur additional cost 1.10 Prepare a report on required services
2. Establish availability of and access to existing cabling	2.1 Calculate capacity of existing cabling against proposed usage to ensure appropriate decisions are taken made about extent of new cabling required 2.2 Inspect cabling to ensure compliance with ACMA regulations, relevant legislation, regulations, codes and standards
3. Complete required reports and documentation	3.1 Complete all required documents promptly and accurately according to enterprise policy 3.2 Prepare a report on cabling infrastructure and equipment according to customer requirements 3.3 Obtain customer confirmation of documented requirements as required 3.4 Distribute relevant documentation promptly to required parties 3.5 Obtain sign-off from customer

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Recognises and interprets technical documentation such as equipment manuals and specifications and other drawings to determine job requirements
Writing	• Uses clear, specific and industry-related terminology to produce and update workplace documentation

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Skill	Description
Oral Communication	• Uses listening and questioning skills to confirm understanding for requirements, participates in a verbal exchange of ideas and solutions, and uses appropriate, detailed and clear language to address key personnel and disseminate information
Numeracy	• Uses mathematical formulae to measure equipment requirements and calculate equipment costs within budgetary constraints
Navigate the world of work	• Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements
Interact with others	• Actively identifies requirements of important communication exchanges, selecting appropriate channels, format, tone and content to suit purpose and audience
Get the work done	• Determines job priorities, resources and equipment, and works logically and systematically to undertake clearly defined and familiar tasks • Implements actions according to a predetermined plan, making slight adjustments if necessary • Takes responsibility for routine decision-making by selecting from a range of predetermined options in routine situations, identifying and taking some situational factors into account • Initiates standard procedures when responding to familiar equipment and logistics problems within immediate context

Unit Mapping Information

ICTTEN432 Identify requirements for customer telecommunications equipment supersedes and is equivalent to ICTTEN401 Identify requirements for customer telecommunications equipment.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN432 Identify requirements for customer telecommunications equipment

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- negotiate with customers about their equipment needs, such as telephony, video, audio, and data
- agree on services required, and availability and access to existing cabling
- identify locations of equipment and placement of cables on support structures
- verify installation based on permitted building conditions
- complete required reports and documentation, including order forms, service checklists, numerical estimates of capacity of cabling and quotation forms
- ensure the integrity of plans.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- process of evaluating customer premises
- key features of floor and building plans that apply to customer telecommunications equipment
- costing processes as determined by enterprise procedures
- features and operating requirements for equipment
- legislation, codes and other formal agreements that impact the work activity
- typical manufacturer requirements for safe operation of equipment
- specific work health and safety (WHS) requirements relating to the activity and site conditions.

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Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s on which telecommunications installations can be conducted
- tools, equipment and personal protective equipment currently used in industry
- relevant databases, licensing requirements and other site-related documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN433 Install configuration programs on PC based customer equipment

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to install software on customer equipment, including digital home integration, security, voice over internet protocol (VoIP), internet protocol television (IPTV), radio frequency identification (RFID), wireless networking and home automation.

It applies to field officers, technicians or technical supervisors working for telecommunications carriers, contractors or other service providers.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Network Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Prepare to install software	1.1 Arrange site access according to required procedures 1.2 Determine type of customer equipment from installation plan to prepare software requirements 1.3 Prepare equipment software configuration specifications to include enhancement/s in customer requirements and confirm with customer 1.4 Notify customer of proposed software installation

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ELEMENT	PERFORMANCE CRITERIA
	1.5 Confirm software compatibility with existing system as required 1.6 Document job software specification 1.7 Obtain logon and security protocols for system
2 Install program and provide secure remote access	2.1 Log on and configure customer specific data according to system specifications 2.2 Install program, test features and system functionality to verify system operational performance according to work health and safety (WHS) regulations, manufacturer specifications and industry standards 2.3 Develop and configure security arrangements and codes for remote access systems in consultation with customer 2.4 Conduct tests to validate security arrangements
3 Undertake administrative tasks	3.1 Save and record configuration program and provide program back-up for contingency use by customer 3.2 Complete administrative tasks and provide a copy of job specification to be securely stored on site according to enterprise policy 3.3 Notify customer of job completion and obtain sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Recognises and interprets technical and enterprise policy documentation to determine job requirements
Writing	• Uses clear, specific and industry-related terminology to produce and update workplace documentation
Oral Communication	• Participates in an oral exchange with customers and technical staff on technical and operational matters
Numeracy	• Uses mathematical formulae to make calculations and take readings for necessary configuration changes
Navigate the world of work	• Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements relevant to own work context

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Skill	Description
Interact with others	• Selects and uses appropriate conventions and protocols when communicating with customers in a range of work contexts
Get the work done	• Understands key principles and concepts underpinning design and operation of digital systems and tools, and applies these when troubleshooting existing technology and when seeking to understand the potential of new technology • Determines job priorities, resources and equipment, and works logically and systematically to arrange site access and arrange equipment deliveries • Implements actions according to a predetermined plan, making adjustments if necessary • Takes responsibility for routine decision-making by selecting from a range of predetermined options in routine situations, identifying and taking some situational factors into account • When dealing with complex issues, uses intuition to identify problems, switching to analytical processes to modify activities depending on operational contingencies

Unit Mapping Information

ICTTEN432 Identify requirements for customer telecommunications equipment supersedes and is equivalent to ICTTEN401 Identify requirements for customer telecommunications equipment.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN433 Install configuration programs on PC based customer equipment

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- prepare software configuration
- load software into customer equipment
- install security programs agreed with customer
- test program and program features including:
  - system facilities
  - product features
  - required peripherals associated with the product
  - system functionality
- notify customer of progress and obtain sign-off.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- regulations, manufacturer specifications, industry standards and requirements, and enterprise procedures relevant to work activity, in particular:
  - work health and safety (WHS)
- channel allocations
- common operating systems and their impact on the configuration of, or version of, software to be installed
- internet protocol (IP) address

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- logon procedures
- enterprise numbering formats
- product or service functions to ensure correct operation of completed installation.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s suitable for installation of system programs
- equipment currently used in industry
- relevant regulatory and enterprise documentation impacting testing and installation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN434 Install, configure and test internet protocol networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to identify required network elements according to specifications, install for interoperability within network, apply network topologies, protocols and security issues, and troubleshoot when required.

It applies to individuals who are involved in installation, maintenance and upgrade of Information and Communications Technology (ICT) networks in telecommunications or Information Technology Networking provisioning companies.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to install IP network	1.1 Determine internet protocol performance requirements 1.2 Select components and network elements according to technical and organisational requirements 1.3 Obtain vendor specifications and availability of required components 1.4 Develop plans for installation of components according to organisational requirements 1.5 Obtain feedback and approval for plans from required personnel
2. Install and configure IP	2.1 Install and configure server hardware and software according

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ELEMENT	PERFORMANCE CRITERIA
network	to organisational and industry standards 2.2 Install and configure computer, other hardware and software according to organisational and industry standards 2.3 Install and configure security and integrity software required for network
3. Test and reconfigure IP network	3.1 Test installed software and hardware, utilising available technical tools, to ensure all components are functioning as expected 3.2 Test the network to ensure it is functioning according to specifications 3.3 Resolve problems identified in the modified network
4. Finalise documentation and clean worksite	4.1 Complete hardware and asset recording document according to organisational requirements 4.2 Document installation, boot-configuration procedure according to organisational requirements 4.3 Tabulate test results and finalise user reports 4.4 Complete client report and notify of network status according to organisational policies and procedures 4.5 Lodge all documentation and seek finalised sign off from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria

SKILL	DESCRIPTION
Learning	• Recognises and anticipates an increasing range of familiar problems, their symptoms and causes, depending on differing operational contingencies, risk situations and environments
Numeracy	• Makes calculations required to take test measurements, interpret results and evaluate performance and interoperability of network
Oral communication	• Uses listening and questioning techniques to confirm requirements and articulate complex concepts and matters using relevant industry for intended audience
Reading	• Recognises and interprets technical, legislative and operational documentation to determine job requirements
Writing	• Prepares documentation detailing work performed according to organisational requirements

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SKILL	DESCRIPTION
Teamwork	• Cooperates with others as part of familiar routine activities and contributes to specific activities requiring joint responsibility and accountability
Planning and organising	• Works logically and systematically to monitor, analyse and action job priorities • Implements and adjusts actions according to a predetermined plan
Problem solving	• Makes decisions quickly and intuitively in familiar situations requiring immediate attention, drawing on past experience to identify key variables and determine required course of action
Self-management	• Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work context • Recognises and follows explicit and implicit protocols and meets expectations associated with own role
Technology	• Demonstrates an understanding of key principles and concepts underpinning design and operation of digital systems and tools, and applies these as required

Unit Mapping Information

Supersedes and is not equivalent to ICTTEN416 Install, configure and test an internet protocol network.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN434 Install, configure and test internet protocol networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- select network elements to plan, prepare and install at least one IP network installation
- configure and test network on at least one occasion
- document completed process.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of organisational procedures including:

- industry-accepted hardware and software products
- data and voice transmission technologies and protocols
- networking technologies
- router-based network architectures
- safe installation of networking products
- interoperability across networking layers.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- field measurement equipment currently used in industry
- network design documentation
- equipment specifications
- network components
- hardware and software

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- a live network
- organisational guidelines
- networked (LAN) computers
- wide area network (WAN) service point of presence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN435 Solve electrical-based telecommunications circuitry and cabling problems

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to solve electrical-based problems encountered in analog and digital signal equipment, signal cabling and wireless networking in the telecommunications sector.

It applies to technicians who undertake a range of functions requiring advanced techniques in testing, fault-finding and rectification for electrical circuitry common to telecommunications signal transmission and operation. These technicians may work in domestic, commercial or industrial situations.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

ICTTEN208 Use electrical skills when working with telecommunications networks

Unit Sector

Telecommunications – Telecommunications Network Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to solve problems within given telecommunications	1.1 Determine need to test live or isolate circuitry 1.2 Use specifications or job documentation to verify circuit/signal

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ELEMENT	PERFORMANCE CRITERIA
circuitry/cable	parameters that are to be measured for a given problem 1.3 Select appropriate test equipment and measure output voltage of digital device for *high* and *low* logic states 1.4 Identify by calculation or given specifications and record expected values within given electrical circuit 1.5 Determine appropriate fault-finding technique to be used for given problem 1.6 Select appropriate test equipment and measure circuit according to methodologies already determined 1.7 Select and source required hand tools/equipment for problem-solving telecommunications circuitry
2. Test and record electrical operating parameters within given telecommunications circuitry/cable	2.1 Apply work health and safety (WHS) procedures to given task 2.2 Isolate circuitry from live source when risk process has indicated that action be taken 2.3 Connect appropriate test devices within electrical circuit to obtain operational measurements as pre-determined 2.4 Reduce circuit path following accepted fault-finding methodologies and test 2.5 Record measured results obtained
3. Analyse and report findings	3.1 Analyse results obtained against specifications and parameters provided 3.2 Determine appropriate circuits and actions to rectify circuitry necessary to resolve given problem 3.3 Supply customer with report on fault/s and options to resolve issue/s

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Reads and responds to complex workplace information contained in specification manuals and standards
Writing	• Writes reports for customer on complex issues

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Skill	Description
Oral Communication	• Uses oral communication skills to participate in workplace teams and to liaise with customers and stakeholders.
Numeracy	• Calculates with whole numbers, decimals and percentages for work • Uses common functions of a scientific calculator for work • Uses and calculate with complex measurements for work
Learning	• Uses strategies for work-related learning • Plans and manages complex workplace tasks
Get the work done	• Works logically and systematically to undertake clearly defined tasks • Analyses task requirements to decide on appropriate equipment and practices • Applies problem-solving processes to locate and resolve faults, and reviews impact of decisions • Determines WHS and risk mitigation required for given tasks

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN435 Solve electrical-based telecommunications circuitry and cabling problems

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- apply work health and safety (WHS) procedures to problem-solving electrical circuitry and cables
- connect suitable test devices incorporating a multimeter and an oscilloscope to investigate operational parameters within AC and DC circuit/s
- perform measurements and calculations on both series and parallel circuits by comparing actual readings with calculated values
- calculate and verify through tests the voltage, current and resistance in both a series and parallel AC/DC given circuit
- apply fault-finding techniques to rectify at least three electrical issues in telecommunications AC/DC circuits
- use circuit characteristics including inductance, impedance and capacitance to improve electrical or signal performance for two basic electronic filter designs
- resolve three electrical issues in an AC/DC circuit.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- safe work practices in electrical work including relevant codes of practice
- localised electrical regulatory requirements including limitations of certain electrical work
- hazards and risks involved in using electrical instruments and the safety control measures within a telecommunications system
- principles of AC and DC electricity and how they impact telecommunications work including:

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- AC and DC electrical International System of Units (SI units)
- symbols used to represent an electrical energy source, a load, a switch and a circuit protection device in a circuit diagram including:
  - series and parallel circuits for AC and DC circuits
  - Ohm's Law and other relevant calculations for AC and DC circuits
  - common circuit configurations
  - current and voltage phase relationships
- waveform characteristics caused by resistance, inductance and capacitance in AC and DC circuits
- common faults that cause an increase or decrease in resistance, voltage and current found in telecommunications circuits
- definitions of electrical terms: period, peak, peak-to-peak, instantaneous, average, root-mean-square value in relation to electrical waveforms
- AC electrical generation producing a sinusoidal waveform including:
  - differences between analog and digital signals and devices
  - sinusoidal, pulsed, and static value waveforms found in AC circuitry
  - characteristics of resonance in AC circuits
- transformer use in electrical circuits including:
  - basic construction, operating principles and use of transformers
  - step-up, step-down, turns ratios, voltage and current ratios
  - verification of operation of transformer circuit

- fault-finding techniques including:
  - half circuit split
  - quarter circuit split
  - towards or away from source
- selection and use of testing equipment in telecommunications circuitry including:
  - test devices used for signal measurement
  - test devices for voltage, current and resistance
- telecommunications signal conversion characteristics including:
  - analog and digital signals
  - signal transmissions
  - application of binary to decimal conversion and vice versa
  - 4-bit binary codes with their decimal equivalent to represent output voltages of a digital to analog converter
  - techniques to convert analog signals to digital and digital signals to analog
  - principles of analog and digital electronics limited to block diagrams common to analog and digital circuits
  - components, circuits and uses of common electronic signal filters in telecommunications (high-pass, low-pass and band-pass)
- transformer use in electrical circuits including:
  - construction and operating principles and uses

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  - step-up, step-down, turns ratios, voltage and current ratios
  - verification of operation of transformer circuit
- typical telecommunications electronic devices, cable types and their applications
- common telecommunications cables, their characteristics of use and application
- features and applications of shielding within telecommunications cables, ‘skin effect’ in cables and transmission losses.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- appropriate AC and DC testing equipment
- test devices that include a multimeter and an oscilloscope for waveform observation
- manufacturer documentation and equipment
- safety equipment
- codes of practice.

Assessment in a simulated environment will require extra low voltage to be used.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB304 Build simple web pages

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to use an integrated development environment (IDE) to create, modify and test, simple web pages and web content, according to client requirements.

The unit applies to those who are responsible for creating and maintaining simple websites.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify authoring and task requirements	1.1 Select preferred integrated development environment (IDE) according to client requirements 1.2 Set preferences for IDE, including site file transfer protocol client
2. Organise required files	2.1 Create, maintain and save files in required location or directory 2.2 Access and use a range of features in IDE 2.3 Confirm use of IDE with required personnel 2.4 Maintain directory structure for site 2.5 Upload files to required folder using file transfer protocol (FTP)

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3. Add content and simple navigation to web pages	3.1 Insert and format text content according to client requirements 3.2 Insert images, data tables and simple forms 3.3 Access markup language and make basic modifications to code 3.4 Create sitemap and plan navigation 3.5 Seek feedback on work performed from required personnel and amend accordingly 3.6 Create links between pages using text and images
4. Test and finalise web pages	4.1 Test elements of website content across multiple browsers and browser versions 4.2 Confirm web page meets client and web content accessibility guidelines 4.3 Evaluate test results and confirm website meets client requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	**DESCRIPTION**
Reading	• Interprets a range of technical specifications and other information and determines solutions according to client requirements
Writing	• Creates files using software and applicable technical language
Self-management	• Identifies and confirms own role and responsibility and complies with specific client requirements • Takes responsibility for planning, sequencing and prioritising tasks within own workload • Makes some critical and non-critical decisions within mostly familiar situations, to develop and test, functional websites according to client requirements • Initiates connections with others through verbal or nonverbal communication and responds as required
Technology	• Identifies and confirms purposes, specific functions and key features of common digital systems and tools

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Unit Mapping Information

Supersedes and is equivalent to ICTWEB302 Build simple websites using commercial programs.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB304 Build simple web pages

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- create a website with at least three different web pages according to client requirements using applicable features of a selected integrated development environment.

In the course of the above, the candidate must:

- create and maintain files and upload them to required locations and servers
- test consistency and security of created web content.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- legislative requirements applicable to developing simple web content
- web content accessibility guidelines including The World Wide Web Consortium (W3C)
- web navigation functions required in supporting web content functionality, including links between pages features of web authoring tools used for web page design
- website publishing and markup languages
- file transfer protocol (FTP) function
- common browsers used for accessing the web
- basic coding techniques
- site map creation methods
- website testing methodologies
- organisational procedures applicable to creating web pages.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- client specifications
- required hardware and software components
- selected integrated development environment (IDE)
- web servers and browsers
- storage media
- required FTP client software
- secure passwords and access procedures.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB305 Produce digital images for the web

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to produce and manipulate images for use in website development.

The unit applies to individuals working as web designers and content creators, who generate and apply digital images and create graphics for a website.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine client requirements	1.1 Access and interpret requirements brief 1.2 Determine and analyse client needs with regard to digital image content, quality and size 1.3 Research and source required images according to organisational and copyright requirements 1.4 Select applicable industry-standard, image-editing software
2. Source and manipulate images	2.1 Create a range of effects using features of image-editing software 2.2 Edit and resize images according to web application requirements 2.3 Create backups of assets to be used

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ELEMENT	PERFORMANCE CRITERIA
3. Save and upload images	3.1 Save images in required formats and maintain their individual effects 3.2 Upload images to applicable server 3.3 Link images to required web pages 3.4 Save images in applicable directory structure 3.5 Check digital images meet client requirements and confirm with required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Identifies and interprets technical information, software and organisational documentation
Writing	• Uses specific software and technical language to create, format, review, save and access web-based images
Problem solving	• Makes some critical and non-critical decisions within mostly familiar situations, to produce digital images according to client needs
Self-management	• Identifies and confirms own role and responsibility • Takes responsibility for planning, sequencing and prioritising tasks within own workload

Unit Mapping Information

Supersedes and is equivalent to ICTWEB303 Produce digital images for the web.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB305 Produce digital images for the web

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- produce at least three different digital images for the web according to client requirements.

In the course of the above, the candidate must:

- adhere to copyright standards and legislation
- save images in required format and location.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- industry standards and copyright legislation applicable to using digital images
- digital image formats and their application
- industry-standard digital image editing software
- purposes, specific functions and key features of common digital systems and tools
- organisational policies and procedures, including procedures for:
  - accessing client briefs
  - sourcing and saving digital images required web content.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- image manipulation software

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- industry standard hardware, digital devices and storage devices
- client briefs relating to images to be produced
- required image editing software
- image sources.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB306 Develop web presence using social media

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to develop and drive social media traffic to an established website using social media platforms. It involves comparing, configuring and using different types of social networking tools and applications to increase web presence.

It applies to individuals in Information and Communications Technology (ICT) roles and use social media tools and applications in business environments

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to use social media tools and applications	1.1 Establish social media requirements according to business specifications 1.2 Identify and analyse characteristics of social media platforms, tools and applications 1.3 Identify issues associated with social media tools and applications according to organisational guidelines and policies 1.4 Compare and discuss purpose and effect of social media platforms, tools and applications with required personnel

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	1.5 Compare and review tools and features of different social media platforms, tools and applications
2. Set up and use social media tools and applications	2.1 Identify social media tools and applications according to business specifications 2.2 Initiate and configure preferred social media tools and applications for use 2.3 Establish social media interface, using text and file content 2.4 Set up accounts for required users according to organisational procedures 2.5 Initiate social networking interaction and confirm security of collaboration 2.6 Link social media and web presence and create content as required
3. Review use of social media tools and application in developing web presence	3.1 Test and evaluate tools and applications according to organisational procedures 3.2 Test and fix errors and confirm website security according to organisational procedures 3.3 Determine whether use of social media tools is effective in developing web presence according to results 3.4 Review social media work and apply required changes according to organisational procedures 3.5 Confirm work performed with required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	**DESCRIPTION**
Reading	• Extracts required information from technical and organisational documents
Writing	• Develops content in a manner that supports and conveys information, using required structures and specialised language
Self-management	• Identifies and applies legal and ethical responsibilities regarding use of social media tools • Makes routine decisions and implements standard procedures for routine tasks
Technology	• Identifies and confirms purposes, specific functions and key features of basic digital systems and tools

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Unit Mapping Information

Supersedes and is not equivalent to ICTWEB201 Use social media tools for collaboration and engagement.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB306 Develop web presence using social media

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop social networking presence and upload and link at least three different file types using social media platforms, tools and applications.

In the course of the above, the candidate must:

- evaluate use of social media tools and application and action required changes
- confirm security of social media interactions according to cyber security procedures and protocols
- seek review from required personnel.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- basic technical terminology in relation to social networking, social media applications and tools
- basic methods of uploading images, text files, portable document format (PDF) files, audio files, video files and linking associated files
- features and functions of social media applications
- import and export software functions
- different types of social media tools and applications, benefits and issues associated with their use
- tagging process and facilitating collaborative folksonomy
- social media applications
- organisational procedures applicable to developing web presence through social media
- cyber security procedures and protocols.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- required hardware and its components
- online resources
- social media tools and applications that may be used to develop web presence through social media.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB432 Design website layouts

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to design a website to client specifications, within a particular technical and human interface environment.

The unit applies to those who are responsible for the analysis, documentation and design of the human computer interface, including requirements that drive design for either internal or external clients.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Define and gather business environment	1.1 Establish client requirements from brief 1.2 Identify applicable standards and design principles required in website development 1.3 Identify hardware and software requirements
2. Define human user interface and user experience and determine site hierarchy	2.1 Conduct user analysis and determine user profile and needs 2.2 Identify user content, operating system and requirements 2.3 Determine applicable design principles for website 2.4 Determine user experience design requirements

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	according to user needs 2.5 Design and create page hierarchy and structure according to design protocol 2.6 Review content and confirm user content requirements are met
3. Integrate and finalise design components	3.1 Apply required information hierarchy to site design 3.2 Design and implement process flow according to client requirements 3.3 Test website layout against user needs and amend as required 3.4 Complete and document design structure

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Oral communication	• Uses listening and questioning techniques with clients for eliciting information and determining specific needs and requirements
Reading	• Interprets, analyse and syntheses, technical and organisational information and informs decision-making in constructing and validating solutions according to work task
Writing	• Develops content in a manner that supports and conveys information, using required structures, templates, software and specialised language • Produces a logically sequenced text and conveys exact procedural requirements and specific and concise instruction and meaning
Problem solving	• Makes routine and complex decisions and develops logical structures within website information and operation using analytical processes
Self-management	• Takes personal responsibility for adherence to standards of industry bodies, where related to own work context • Takes responsibility for planning, sequencing and prioritising tasks within own workload and delivers outcomes on time
Technology	• Identifies and confirms purposes, specific functions and key features of common digital systems and tools

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Unit Mapping Information

Supersedes and is equivalent to ICTWEB401 Design a website to meet technical requirements.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB432 Design website layouts

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design a website layout using applicable tools and procedures according to client requirements.

In the course of the above, the candidate must:

- identify website and design structure required by conducting a user analysis
- define user interface, user experience and site hierarchy test and amend website layout design document work including documentation of design structure, process notes, tests and solutions.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- copyright and intellectual property requirements applicable to designing web layouts
- customer and business liaison that is applicable to designing website layouts
- internet connectivity impacts
- page load times measurement tools
- technical specifications documentation procedures
- standards applicable to website design
- website design methods and standard website structures
- design and cyber security procedures and protocols
- media queries relevant to designing website layouts documentation techniques applicable documenting website layout designs
- performance budget applications relevant to designing website layouts.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- client requirements documentation
- required hardware, software and digital devices
- site and web servers
- industry standard operating system
- applicable standards and copyright information.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB433 Confirm accessibility of websites

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to confirm accessibility of websites for users with auditory, visual, mobility and cognitive impairments.

The unit applies to web developers and designers who are required to adhere to international and Australian industry standards and practices to ensure that users with accessibility requirements are not disadvantaged when using websites.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify accessibility standards	1.1 Research and identify, specific user groups with particular accessibility requirements 1.2 Identify general legislated and industry accessibility standards and requirements 1.3 Identify web development standards 1.4 Consolidate specific and general standards and requirements, into an accessibility checklist
2. Test accessibility of pages and website	2.1 Select and run automatic testing tools and software 2.2 Check text equivalent for every non-text element is present in website where feasible 2.3 Confirm text-only pages are logical and accessible

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ELEMENT	PERFORMANCE CRITERIA
	2.4 Demonstrate document can be read without style sheets 2.5 Check and confirm information and pages are not dependent on colour and can operate in monochrome environment 2.6 Verify pages operate on text-to-speech browser 2.7 Test site with different user groups and confirm site transforms and maintains accessibility
3. Apply and document changes and obtain sign off from required personnel	3.1 Apply and document required changes to pages and website according to testing results 3.2 Check and confirm priorities identified in analysis of web development standards are met and completed 3.3 Confirm website is compliant with accessibility checklist requirements 3.4 Confirm accessibility of website is signed off by required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Identifies, analyses and evaluates complex texts
Writing	• Formats, reviews and amends web-based documents using specific software and technical language • Generates checklists that include accessibility standards criteria and other specific requirements
Oral Communication	• Uses listening and questioning to shares viewpoints, elicit information and participates in verbal exchanges with stakeholders
Self-management	• Takes personal responsibility for adherence to the regulatory and legislative standards related to own work context • Demonstrates responsibility and ownership of tasks and makes decisions on completion parameters and need for consultation and coordination with others • Plans, sequences and prioritises tasks and own workload and delivers outcomes on time
Problem-solving	• Identifies areas of pages and website that are not compliant with accessibility standards through testing and applies required changes to

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SKILL	DESCRIPTION
	solve issues.
Teamwork	• Selects and uses applicable conventions and protocols when communicating with clients in a range of work contexts
Technology	• Identifies and confirms purposes, specific functions and key features of common digital systems and tools • Completes a series of diagnostic tests and tasks according to web development standards for accessibility

Unit Mapping Information

Supersedes and is equivalent to ICTWEB402 Confirm accessibility of websites for people with special needs.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB433 Confirm accessibility of websites

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- confirm a website is accessible for people with special needs and adheres to general and specific accessibility standards and requirements.

In the course of the above, the candidate must:

- identify wider context of accessibility through research of accessibility standards
- creates an accessibility checklist which incorporates accessibility standards and requirements
- test accessibility of pages and website using a range of tools and tests
- apply and document required changes according to testing results
- obtain sign-off from required personnel.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- legislation, regulations and codes of practice, applicable to access, equity and security
- computing and programming standards applicable to access and equity
- technical performance measurement principles
- automatic testing tools and software
- required programming language
- Web Accessibility Initiative (WAI)
- World Wide Web Consortium (W3C), WCAE and other Australian accessibility standards.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a website and included web pages
- required hardware, software and digital devices
- requirements documentation
- the internet
- automatic accessibility measuring tools and software
- organisational requirements and applicable standards.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB434 Transfer content to websites

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to transfer content, from a remote location to a web server, using a range of commercial information and communications technology (ICT) products. The objective of this skill is the upload of new and revised information on a website.

The unit applies to individuals who work as web developers and designers and required to update websites.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Select and configure file transfer protocol client	1.1 Identify content requiring transfer to website 1.2 Review and select file transfer protocol (FTP) client according to features and functions of content and technical environment 1.3 Enter client details, including user identity (ID), password and host name or ID, into profile fields to create a permanent profile 1.4 Choose settings including auto-detect, save profile and password, depending on organisational security and privacy policies and guidelines

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ELEMENT	PERFORMANCE CRITERIA
	1.5 Test and verify, configuration by connecting to web-hosting server
2. Plan and prepare for data transfer and establish server connection	2.1 Prepare data content and back it up on local device and server 2.2 Identify data as compressed, or uncompressed, with tools available on server 2.3 Confirm files are in required form and receiving directory structure is applicable 2.4 Log on to remote server using administrative, guest or anonymous accounts 2.5 Proceed through security layers according to organisational guidelines and cyber security protocols 2.6 Initiate file transfer protocol client program and locate destination directory
3. Transfer data to remote server	3.1 Select files to be transferred and choose mode, American Standard Code for Information Interchange (ASCII), or binary 3.2 Download files and run antivirus software and confirm files are secure according to cyber security protocols 3.3 Move, rename, copy and delete files on server as required and as permissions allow 3.4 Store and order files according to file extensions and task requirements 3.5 Translate, decompress and de-archive downloaded files 3.6 Confirm data transfer, content functionality and close connection

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Accesses and evaluates technical information, standards and data • Confirms alignment between work requirements, implementation protocols and specified outcomes
Writing	• Creates, updates and enters and verifies data and information using specific standards, software and technical language, according to work requirements, implementation protocols and specified outcomes

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SKILL	DESCRIPTION
Self-management	• Takes personal responsibility for adherence to legislative requirements and organisational policies and guidelines related to own work context • Plans, sequences and prioritises tasks and own workload and delivers outcomes on time
Technology	• Identifies and confirms purposes, specific functions and key features of common digital systems and tools • Completes a series of sequential tasks required in preparing and transferring data to a website

Unit Mapping Information

Supersedes and is equivalent to ICTWEB403 Transfer content to a website using commercial packages.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB434 Transfer content to websites

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- transfer at least three files to a remote server using file transfer protocol (FTP) client, according to organisational security and privacy policies and guidelines.

In the course of the above, the candidate must:

- select and configure a file transfer protocol (FTP) client
- test configuration of FTP client
- plan and prepare content to be transferred including file format, receiving directory structure, account logins and security issues
- connect to server using applicable account login
- follow security procedures according to cyber security protocols
- transfer content to remove server
- store and maintain files in required location.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- the FTP server and client software
- cyber security and internet protocols
- content features and functions
- security issues applicable to transferring content
- server access security procedures and connection methods
- website server architecture and operating systems
- data backup and file transfer methodology
- organisational security and privacy policies and guidelines.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- web servers and tools
- a website
- content requiring transfer
- required hardware and digital devices
- client and login details
- FTP client software
- file storage location
- antivirus software
- server security password and access procedures.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB435 Maintain website performance

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to track and monitor website performance and confirm maintenance of performance levels during peak traffic times and full use access.

The unit applies to individuals who use planning and analytical skills to maintain and improve website performance.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Benchmark website performance	1.1 Review client performance expectations, specifications and business requirements 1.2 Identify administration and maintenance requirements, against specifications and business requirements 1.3 Establish performance benchmarks, from specifications and business requirements 1.4 Test and record measured performance benchmarks against specifications
2. Track and tune website performance	2.1 Track user activities and compare actual website performance against performance benchmarks in key areas 2.2 Record and document performance inconsistencies and

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ELEMENT	PERFORMANCE CRITERIA
	incorporate learning into revised policy and procedures 2.3 Identify website faults and implement improvements using diagnostic and software tools according to organisational policies and procedures 2.4 Establish automatic fault reporting procedures and processes 2.5 Monitor and maintain website security measures 2.6 Document and implement administration and maintenance schedules 2.7 Complete and record fault, correction and maintenance reports
3. Initiate and monitor performance improvement	3.1 Plan and action, preventative maintenance and establish preventative indicators 3.2 Identify maintenance, administration and performance problems by establishing a client initiative capturing mechanism 3.3 Review maintenance and administration documentation, security tools and procedures, according to policy and procedures and conduct improvements 3.4 Update website, including information, links, multimedia links and back-end software 3.5 Confirm client performance expectations are met and respond to client

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Assigns numerical values to performance requirements, • Informs decisions, tracks performance and establishes actions to be taken in relation to required work task using measurement data to
Reading	• Examines, constructs, organises and validates relationships between discrete and interrelated, data and information
Writing	• Modifies documents using on-going analysis of performance data and feedback • Prepares a well-structured and cohesive document and presents analysis of evidence and actions using required format, technical language and spelling and grammar
Teamwork	• Communicates with others in a specific work context using required conventions and protocols

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SKILL	DESCRIPTION
Self-management	• Takes personal responsibility for following, explicit and implicit, organisational policies applicable to own work
Technology	• Identifies and confirms purposes, specific functions and key features of common digital systems and tools

Unit Mapping Information

Supersedes and is equivalent to ICTWEB404 Maintain website performance.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB435 Maintain website performance

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- track, tune and monitor performance of a website's performance according to client performance expectations, specifications and business requirements.

In the course of the above, the candidate must:

- identify and rectify faults using diagnostic and software tools, where performance is not met
- document faults identified and improvements made according to organisational policy and procedures
- implement scheduled and non-scheduled maintenance
- review and update documentation relating to maintenance and administration and security according to findings
- perform website updates.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- website performance maintenance process including:
  - security issues
  - website server architecture (e.g. Linux, Windows, Unix)
  - website security protocols
  - workload (web traffic) metrics
- business process design methodologies relevant to maintaining website performance
- performance benchmark testing techniques
- website improvement methods

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- documentation techniques relevant to maintaining website performance
- security tools and procedures
- website administration techniques including updating website content and links
- organisational policies and procedures applicable to maintaining website performance.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- client specifications documentation
- web servers and websites
- required software, hardware and digital devices
- technical specifications
- web traffic diagnostic tools, including timing tools to gauge website response times
- organisational policies and procedures.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB436 Monitor traffic and compile website traffic reports

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to monitor and compile reports on website traffic and to compile traffic reports according to organisational requirements.

The unit applies to individuals who maintain websites.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to monitor website traffic	1.1 Identify and analyse available site-analysis software, according to organisational requirements and website architecture 1.2 Choose and install site-analysis software 1.3 Identify required report options according to organisational requirements and website architecture 1.4 Develop a traffic monitoring program
2. Monitor web traffic	2.1 Identify required traffic reports according to organisational requirements 2.2 Generate required traffic reports
3. Finalise and report on website traffic	3.1 Analyse reports and identify improvements to server and to site performance 3.2 Apply forecasting methodologies and predict traffic peaks

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ELEMENT	PERFORMANCE CRITERIA
	3.3 Recommend changes in site-specific hardware and software 3.4 Implement changes according to traffic reports 3.5 Continue traffic monitoring program, as required

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Evaluates and presents, numerical and statistical data, to inform decisions and actions
Reading	• Identify, analyse and evaluate a range of organisational documents and technical information
Writing	• Constructs a data collection tool, incorporating the timelines and information to be collected • Prepares a technical report using punctuation, language and layout and convey investigation results and recommendations
Teamwork	• Selects and uses applicable conventions and protocols when communicating in a range of familiar work contexts
Problem solving	• Monitors web server and site performance and suggests improvements using analytical thinking and diagnostic processes
Self-management	• Takes personal responsibility for following explicit and implicit organisational requirements applicable to own work
Technology	• Identifies and confirms purposes, specific functions and key features of common digital systems and tools and operates them according to traffic monitoring requirements

Unit Mapping Information

Supersedes and is equivalent to ICTWEB405 Monitor traffic and compile website traffic reports.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB436 Monitor traffic and compile website traffic reports

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- select and install a site-analysis software and an internet service provider (ISP) according to organisational and vendor requirements and website architecture
- generate and analyse at least two different traffic reports.

In the course of the above, the candidate must:

- recommend and implement changes from traffic reports.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- problems and challenges arising with an organisation website related to:
  - data queues and bottlenecks
  - website security
  - website copyright and intellectual property requirements
- the process of monitoring website traffic, including:
  - functionality of network device drivers
  - functionality of network operating systems
  - queuing systems
  - website architecture
  - workload metrics
  - server design and functionality
- the features and functionality of commercially available drivers, software and systems, including:
  - log file analysis software

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  - traffic tracking software
  - network device drivers
  - network operating systems
  - queuing systems
- forecasting methodologies relevant to monitoring and reporting on website traffic
- organisational policies and guidelines applicable to monitoring and reporting on website traffic.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- analysis software
- web servers and website
- required hardware, software and digital devices.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB437 Create website testing procedures

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to design and implement procedures, which measure the performance of a website and compare these procedures to the initial design specifications.

The unit applies to individuals who may use significant judgement in planning, design, evaluation, technical or leadership and communications functions in frontline technical support roles.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Document and define performance criteria	1.1 Review performance specifications and determine benchmark criteria 1.2 Validate and document each performance function 1.3 Select measurement methodology 1.4 Record and document metric tools using applicable methodology 1.5 Prepare performance benchmarks and seek agreement on criteria with client
2. Validate performance measures	2.1 Design and develop inspection and test plans and validate performance measures throughout performance cycle

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Test performance functions and record results according to technical documentation and organisational standards 2.3 Compare results of performance function testing to benchmarks 2.4 Redesign functions that do not meet performance benchmarks 2.5 Re-implement functions that have been redesigned during performance testing 2.6 Document performance standards and benchmarks and obtain sign-off
3. Finalise and obtain sign-off	3.1 Submit methodology and function testing document and results and obtain client approval 3.2 Review client feedback and make changes as required 3.3 Obtain website testing procedure sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Measures and evaluates performance, against established baseline numerical values
Oral communication	• Participates in verbal exchanges with the client requiring active listening and responses to questions and elicits required and specific information
Reading	• Evaluates, integrates and confirms authenticity of data and information and reaches an understanding of contextual and procedural nature of business solutions
Writing	• Develops and documents benchmark standards, performance plans, measurements and detailed results and recommendations using required formats and writing principles in accordance with technical standards and organisational conventions
Teamwork	• Selects and uses applicable conventions and protocols when communicating in a range of familiar work contexts
Self-management	• Takes personal responsibility for following explicit and implicit, organisational requirements applicable to own work • Determines, implements and evaluates testing and validation processes using analytical thinking, systematic decision- making and diagnostic processes

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SKILL	DESCRIPTION
Technology	• Identifies and confirms purposes, specific functions and key features of common digital systems and tools and operates them in performing testing procedures

Unit Mapping Information

Supersedes and is equivalent to ICTWEB406 Create website testing procedures.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB437 Create website testing procedures

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- create a website testing procedure according to client requirements and performance specifications.

In the course of the above, the candidate must:

- identify critical performance functions requiring testing
- develop and document required metrics for each function and assign benchmarked performance standards
- validate performance of site against technical requirements
- document results and establish performance benchmarks and obtain client sign off.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- legislation, regulations, codes of practice and standards applicable to web testing including:
  - codes of ethics
  - privacy
  - copyright
  - intellectual property
  - naming
  - documentation
- industry standards, organisational guidelines and technical documentation standards and techniques relevant to creating website testing procedures
- client business domains, including client organisation structure and business functionality

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- industry standard hardware and software products
- desktop applications and operating systems
- standard web-testing procedures and optimisation tools
- website design methodologies and standard website structures.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a website
- required hardware and digital devices
- site design and technical requirements documentation
- site-development software and tools.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB438 Conduct operational acceptance tests of websites

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to provide high-level assurance that websites can be effectively and efficiently provisioned and deployed live, in a systematic manner.

The unit applies to individuals employed as web designers and web developers who are involved in testing the effectiveness of websites.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare test and establish testing framework and methodology	1.1 Establish and document testing framework and schedule 1.2 Determine processes and functions requiring testing and assign quantitative and qualitative performance benchmarks to each process and function 1.3 Document page templates, style guides and expected traffic loads 1.4 Determine and document test methodology and select automatic testing software 1.5 Assemble and brief testing panel on conduct of test 1.6 Develop user and installation manuals according to user

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ELEMENT	PERFORMANCE CRITERIA
	needs and requirements
2. Test individual pages and page relationships against business requirements	2.1 Test pages against style guides and templates and confirm consistency of structure and content 2.2 Apply automatic testing software 2.3 Document page statistics of confirmed test results 2.4 Test installation and examples listed in instruction manual 2.5 Assess page navigability, response time and functionality using a variety of browsers and devices against business requirements 2.6 Test software interface points, site security and privacy against business and technical requirements 2.7 Conduct load simulation testing, using single and multiple independent browsers, or automated load testing tools 2.8 Obtain and complete test sign-off sheets for applicable tests
3. Apply and document further tests	3.1 Test website's ability to handle concurrent access 3.2 Conform to applicable privacy, accessibility and acceptable usage policy standards 3.3 Apply automatic testing software 3.4 Collect, collate and document results from sample user and data from automated test 3.5 Obtain and complete test sign-off sheets for further tests performed
4. Evaluate test results	4.1 Consolidate and compare results to benchmarks 4.2 Identify results that fail to meet benchmarks and conduct a site remedial iteration 4.3 Record and document test results as site performance baseline, against which further development and updating can be measured 4.4 Provide evaluation feedback to required personnel and obtain signoff prior to going live

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

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SKILL	DESCRIPTION
Numeracy	• Determines, analyses and presents, numerical and statistical, data and informs decisions and actions required
Oral communication	• Conveys information by participating in verbal exchanges including listening, questioning and discussing, data and information
Reading	• Examines, constructs, organises and validates relationships, between both discrete and interrelated data and information
Writing	• Produces a concise formal document and conveys technical information and procedures using required format, technical language and spelling and grammar
Problem solving	• Develops options, resolves issues, designs and implements tests and ascertains functionality of solutions prior to full implementation • Designs and refines ideas according to needs, resources and constraints using a combination of lateral and analytical thinking
Self-management	• Complies with product and business requirements and protocols • Sequences and schedules complex activities, monitors implementation and manages communication
Technology	• Creates and refines websites using a range of digitally-based technologies and software packages and hardware

Unit Mapping Information

Supersedes and is equivalent to ICTWEB407 Conduct operational acceptance tests of websites.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB438 Conduct operational acceptance tests of websites

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- prepare an operational acceptance test that measures the independent and integrated structural content and technical components of the site according to business requirements.

In the course of the above, the candidate must:

- confirm testing panel is aware of test conduct
- develop user and installation manuals
- apply automatic testing software and collect, collate and document results and tests
- conduct tests on at least two browsers and at least two digital devices
- evaluate results against benchmarks
- provide feedback on test results to required personnel.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- the client business domain
- the structure, function and business organisation of the client, including business-process design
- organisational policies and procedures that cover routine work processes and use of:
  - web optimising tools
  - web monitoring tools
  - web testing procedures
- technical performance measurement
- user acceptance testing methods

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- website accessibility and equity principles
- website structures, design and testing methodologies and standards
- common website security issues and risk mitigating methods
- common testing software and metrics used and its application
- applicable privacy, accessibility and accessible usage policy standards
- organisational policies and procedures relevant to conducting operational acceptance tests of websites.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- required tools, equipment and materials including:
  - web servers, browsers and website
- industry standard software packages, including site server software and analysis software
- required hardware, digital devices and its components
- organisational requirements documentation, customer relationship model, website manuals and instructions.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB439 Confirm basic website security

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to provide basic website server and protocol security to level required by an organisation.

The unit applies to individuals employed as web maintenance staff who are required to check that a website meets basic security requirements.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine business security requirements	1.1 Identify level of security required according to business and commercial intent of website 1.2 Identify whether password protection is required for site, or part of site 1.3 Decide on minimum and maximum password protection solutions according to business requirements
2. Confirm web server security	2.1 Confirm web server password is obscure and non-traceable 2.2 Install and maintain intrusion detection system, according to business requirements 2.3 Check and confirm user accounts only have required permissions on server 2.4 Confirm interpreters' programs running common gateway

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ELEMENT	PERFORMANCE CRITERIA
	interfaces (CGIs) are not stored in CGI-bin directory 2.5 Check web form data before passing it to server
3. Confirm protocol security	3.1 Protect fixed internet connection and internet protocol (IP) address 3.2 Protect shared network resources from intrusion, according to business requirements 3.3 Conform protocols and preferences on digital devices follow security protocols 3.4 Disable control protocol and internet protocol (TCP/IP) bindings according to task requirements 3.5 Check and confirm network basic input/output system (NetBIOS) over TCP/IP is disabled 3.6 Confirm basic security level of website is met with required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Oral communication	• Listens and asks questions in eliciting information
Reading	• Identify and evaluate technical information in producing solutions according to business requirements • Identify critical information and confirms accuracy through cross checks
Writing	• Writes and edits, computer code and technical data and confirms syntax and accuracy
Planning and organising	• Plans approach to work according to analysis of business needs and requirements
Problem solving	• Resolves issues and implements tests and ascertains functionality of solutions prior to full implementation • Utilises a combination of lateral and analytical thinking and evaluates and validates reliability and efficacy of website
Self-management	• Sequences, schedules and prioritises own work activities
Technology	• Uses a range of digitally-based technologies and software packages and hardware, required for interrogating vendor databases and

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SKILL	DESCRIPTION
	websites

Unit Mapping Information

Supersedes and is equivalent to ICTWEB408 Ensure basic website security.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB439 Confirm basic website security

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- confirm a basic level of security for a website according to business requirements.

In the course of the above, the candidate must:

- implement password protection solutions, for the website and server
- install and maintain, an intrusion detection system
- implement protocol security
- confirm security of website with required personnel.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- the client business domain, including client organisation structure and business functionality and requirements
- desktop applications and operating systems, as required
- firewall functionality
- hypertext transfer protocol (HTTP) and disk and executing monitor tools (daemons)
- the range of security protocols, including:
  - secure socket layer (SSL)
  - point-to-point network tunnelling protocol (PPTP)
  - layer 2 tunnelling protocol (L2TP)
- required security patches used to confirm basic website security
- disabling control protocol and internet protocol (TCP/IP) bindings, including file and printer sharing
- industry standard protection solutions

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- specific purpose security devices acting as bastion hosts
- web-server operating systems.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- required tools, equipment, materials
- a website and web servers
- the internet
- industry-standard hardware and software packages and products
- digital devices
- organisational requirements documentation
- website manuals and instructions.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB440 Use web authoring tools

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to use a web-authoring tool to convert text and images and create website content for a client.

The unit applies to individuals employed as web developers who are responsible for developing websites for a client.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for task and use of authoring tool	1.1 Establish client website and business requirements 1.2 Discuss and confirm client scope with required personnel 1.3 Identify and select preferred web authoring tool according to client requirements 1.4 Set web-authoring tool preferences 1.5 Customise and navigate web authoring tool environment and workspace according to website and business requirements 1.6 Define and name site and root folder 1.7 Create site map and plan navigation

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ELEMENT	PERFORMANCE CRITERIA
2. Create files and CSS	2.1 Create files with client data and save in required location and directory 2.2 Collate and format text and images according to website requirements 2.3 Create basic external cascading style sheets (CSS) according to organisational guidelines and procedures 2.4 Define styles for required tags according to business requirements 2.5 Link CSS to created files and display formatting according to organisational guidelines and procedures
3. Define library items	3.1 Identify and include recurring items in library 3.2 Format selected items according to CSS 3.3 Check tags of selected library items, according to task requirements 3.4 Update items contained in library according to business requirements
4. Develop boiler plates	4.1 Create boiler plate file and link with CSS 4.2 Format and name boiler plate according to website requirement 4.3 Place generic images in a page as required by business image 4.4 Save and modify boiler plates according to organisational procedures
5. Create simple forms and navigation	5.1 Create form and add elements 5.2 Set element properties 5.3 Insert additional fields as required 5.4 Identify availability and location of required script 5.5 Connect form to script 5.6 Test form and fix errors 5.7 Create links between pages and reflect content structure using text and images
6. Finalise task and seek feedback	6.1 Test links and website on multiple browsers and devices and fix as required 6.2 Confirm website is secure and follows cyber-security procedures and protocols 6.3 Seek feedback and obtain sign-off from required personnel

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Identifies and interprets information from technical and business documentation and completes work tasks according to business requirements and technical specifications
Writing	• Creates, formats, reviews, saves and accesses web based documents, templates, diagrams and images using specific software and technical language • Electronically enters data and information according to business requirements and adheres to technical requirements and specifications
Problem solving	• Solves operational problems as they arise
Self-management	• Prioritises and monitors own work • Analyses business requirements and interprets technical aspects of implementation
Technology	• Operates software applications, selects required authoring tools according to required specifications and writes and maintains hypertext markup language (HTML)

Unit Mapping Information

Supersedes and is equivalent to ICTWEB410 Apply web authoring tool to convert client data for websites.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB440 Use web authoring tools

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop a web page using web authoring tools according to website and business requirements.

In the course of the above, the candidate must:

- create and incorporate files with required formatted text and images
- confirm web pages are functional on at least browsers and at least two devices
- check cyber-security of web page.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- client business domains required to use web authoring tools
- industry standard web authoring tools and preferences including site file transfer protocol (FTP) clients
- organisational guidelines and procedures applicable to using web authoring tools
- vendor standards and requirements for web authoring tools
- text and image formatting techniques
- web page customisation and navigation techniques
- standard web and CSS design principles and structures.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

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- industry software packages and vendor instructions
- a website
- web authoring software and tools
- business expectations brief
- required hardware and its components
- multiple browsers and digital devices
- the internet.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB441 Produce basic client-side script

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to develop interactive and engaging websites, using a range of features from various languages.

The unit applies to individuals working in web development environments who are required to produce client-side scripts as a common means of creating interactive websites. These scripts offer an effective simple means of enabling websites to provide greater interaction with clients.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Analyse web document requirements	1.1 Determine dynamic functionality of web document 1.2 Identify required language according to required functionality 1.3 Engage in client discussions and determine web document requirements 1.4 Confirm level of documentation required
2. Design and produce web documents	2.1 Design web document and embedded scripts and confirm required functionality is achieved according to organisational procedures 2.2 Write a simple hypertext markup language (HTML), considering accessibility

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	2.3 Write and produce embedded scripts according to web document requirements
3. Test and debug scripts	3.1 Test web document against required functionality and reiterate accordingly 3.2 Test script using cyber security procedures and protocols and confirm script is secure and bug free 3.3 Complete documentation and submit to required personnel for approval

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Oral communication	• Articulates using specific language applicable to technical, operational and business audiences • Confirms interpretation using listening and questioning techniques
Reading	• Identifies and interprets textual information in various information and communications technology (ICT) languages and determines dynamic functionality of web document
Writing	• Develops material and conveys explicit information for a specific audience, using detailed ICT language
Problem solving	• Plans approach to work according to internet protocols and analysis of business needs and requirements • Resolves issues, including design and functionality conflicts, debugging and handling errors and implements tests to ascertain functionality of solutions, prior to full implementation • Designs and validates reliability and efficacy of web documents using a combination of lateral and analytical thinking and practice,
Self-management	• Sequences, schedules and prioritises own work activities
Technology	• Views active elements and objects across different platforms and designs and produces web documents using a range of digitally-based technologies, software packages and hardware.

Unit Mapping Information

Supersedes and is equivalent to ICTWEB411 Produce basic client-side script for dynamic web pages.

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Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB441 Produce basic client-side script

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design and produce a script according to web document functionality requirements and organisational procedures.

In the course of the above, the candidate must:

- produce dynamic web page documents, considering accessibility of web page
- test and debug web document functionality and confirm web document is secure
- document and seek approval from required personnel.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- basic principles behind open platform programming
- client-side scripting and its application to dynamic web page design, including:
  - events and event handlers
  - internet operation related to clients
  - internet protocols
  - simple hypertext markup language (HTML)
  - applicable standards
- purpose and differences between server-side and client-side scripting
- standards associated with programming documentation
- script testing methodologies
- cyber security procedures and protocols
- organisational procedures relevant to producing client-side scripts.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- required tools, equipment and materials
- industry standard software packages and features within
- required hardware and digital devices
- client requirements documentation
- cyber security procedures and protocols
- functionality and scope requirements.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB442 Produce interactive web animation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to create interactive animated enhancements to advertisements and web pages.

The unit applies to individuals working as web designers who generate and apply advertisements for website clients, create animations to enhance a web page message and produce fully animated websites.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Analyse project requirements	1.1 Identify dynamic functionality of animation within web document 1.2 Determine required language in achieving functionality 1.3 Confirm web document requirements 1.4 Research and evaluate online advertising industry requirements using major agencies and website examples
2. Design and produce web animations	2.1 Design web document and animations 2.2 Design and create gif replacements for animation according to major advertising agency requirements 2.3 Confirm advertisements meet industry standard website advertising specifications including size, number and loops,

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	sound and buttons 2.4 Design advertisements and promote web page within website and on externally hosted paid advertising 2.5 Confirm animations add to overall professionalism and entertainment value of website 2.6 Produce web page animations and confirm suitability with required personnel
3. Test and publish animations	3.1 Test and debug scripts against required functionality and reiterate as required according to organisational and cyber security protocols and procedures 3.2 Publish animations in required web format and confirm animations are viewable on different devices and browsers 3.3 Incorporate web animations into a hypertext markup language (HTML) page 3.4 Complete documentation and submit to required personnel for approval

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	**DESCRIPTION**
Learning	• Identifies and explores, connections between ideas and methodologies • Gathers and sources knowledge required in resolving technical difficulties using research techniques and extends knowledge of job requirements
Numeracy	• Interprets numerical information and applies basic mathematical calculations to recurring technical features
Reading	• Determines advertising, client and technical requirements by analysing and comparing industry-specific and related text
Writing	• Prepares and produces, dynamic material using clear and detailed language and conveys explicit information, requirements and recommendations
Planning and organising	• Takes responsibility for planning, sequencing and prioritising tasks and own workload and delivers outcomes on time
Problem solving	• Makes routine decisions and implements standard procedures for routine tasks, using formal decision-making processes in more complex and non-routine situations
Technology	• Uses familiar digital technologies and systems to access information, search and enter, data and code, present information and communicate

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SKILL	DESCRIPTION
	with others, cognisant of data security and safety

Unit Mapping Information

Supersedes and is equivalent to ICTWEB412 Produce interactive web animation.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB442 Produce interactive web animation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- produce a web animation according to functionality and web document requirements.

In the course of the above, the candidate must:

- determine animation and online advertising requirements
- design interactive animations including gif replacements
- meet industry standard website advertising specifications
- create web page and advertising application animations
- publish animations to web environment and confirm compatibility with at least two browsers and at least two devices
- confirm web animation is cyber safe and secure according to cyber security protocols and procedures
- document actions performed and seek approval.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- web animation programming concepts including:
  - acceptable asset importing formats
  - component libraries
  - cross-browser issues
  - importing and exporting libraries
  - inserting published work to a hypertext markup language (HTML)
  - masking
  - movements and automated movements

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  - publishing completed work to an acceptable web format
  - shape animation and manipulation
  - symbols
  - text manipulation
  - transparencies
- programming control structures, object-oriented programming including:
  - buttons
  - scripting using programming language
- internet technology, including selecting required scripting type
- principles of web parameters analysis and animations design
- methods and attributes of animation and how it enhances website
- web animation testing and debugging methodologies
- organisational and cyber security protocols and procedures
- industry requirements in online advertising.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a development environment
- the internet
- required hardware and digital devices
- browsers
- a website
- required web design software.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB443 Implement search engine optimisations

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to implement industry standard internet-marketing practices using search engine optimisation (SEO) techniques, including introducing web pages to search engines and monitoring search engine performance.

The unit applies to individuals who make recommendations and monitor keyword enhancements, search engine marketing (SEM) and social network marketing (SNM).

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Analyse internet-marketing requirements	1.1 Define overall SEO goals and target audiences and set objectives in accordance with business requirements 1.2 Record and analyse traffic to site using online tools, reports and web-hosting statistics 1.3 Create a keyword suggestion list through keyword research and compile and categorise keywords using online tools, considering macro and sub-keywords 1.4 Identify and discuss gaps, opportunities and areas of potential optimisation, through page and website position analysis and create recommendations accordingly
2. Prepare an internet	2.1 Prepare a client recommendation report, covering differences

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ELEMENT	PERFORMANCE CRITERIA
marketing strategy report	between search engine optimisation, search engine marketing and social network marketing using detail from analysis 2.2 Make recommendations about search engines and social network media, based on volume of users 2.3 Develop action plan and timeframe, including goals, recommendations, priorities, schedules, allocation of roles and responsibility 2.4 Explain search terms to required personnel 2.5 Make recommendations on implementation of search engine optimisation, search engine marketing and search engine ranking improvement methods
3. Implement and review SEO strategy	3.1 Implement keywords, content sections and short tail and long tail keywords on pages 3.2 Implement the sections for content, and back links from quality websites 3.3 Create online profiles for updating search engine data 3.4 Introduce website to major search engines 3.5 Measure SEO performance, including website position 3.6 Evaluate traffic analysis reports and compare these with previous results 3.7 Summarise findings and make further recommendations

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Critically analyses complex documentation from a variety of sources and consolidates information relating to specific criteria and determines requirements
Writing	• Records and completes organisational documents and correspondence, using plain English, required spelling, grammar and terminology
Oral Communication	• Convey and clarifies information and confirms interpretation using collaborative and inclusive techniques, including active listening and questioning and reading of verbal and non-verbal signals
Numeracy	• Measures usage and prepares client reports by interpreting statistical information and comparing information • Estimates improved search engine timeframe results using

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SKILL	DESCRIPTION
	mathematical calculations using mathematical calculations
Self-management	• Takes responsibility for planning, sequencing and prioritising tasks and own workload • Contributes to continuous improvement of work by applying basic principles of analytical and lateral thinking
Problem-solving	• Addresses less predictable problems and initiates standard procedures in response to these problems and determines a solution by applying problem-solving processes
Technology	• Uses familiar digital technologies and systems to access information, search and enter data and code, present information and communicate with others

Unit Mapping Information

Supersedes and is equivalent to ICTWEB413 Optimise search engines.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB443 Implement search engine optimisations

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- conduct analysis and review two existing websites and create optimisation plans for each, according to business requirements.

In the course of the above, the candidate must:

- analyse website performance
- make recommendations according to analysis performed
- prepare and implement, an internet search engine marketing strategy according to website analysis and business requirements
- monitor search engine performance and compare these with previous results.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- internet marketing methods and practices including:
  - search terms
  - keywords
  - keyword density
  - search engine ranking
  - search engine methods of assessing search engine optimisation (SEO)
  - back links
  - social network media in the context of SEO
- how search engines work
- recommendations in optimising the following:
  - image search optimisation (ISO)

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    - keyword density on web pages
    - keywords used in headings and heading levels meta-elements and page tiles
- a website's internet marketing strategy
- performance budgets, including loading speeds and ways to optimise speed to load
- keyword research methodology including
    - surveys
    - focus groups
    - social media listening platforms
    - statistical analysis
    - research professionals
- search engine traffic sources
- the differences between paid and organic searches
- SEO and website metrics
- mobile friendly websites.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- website files
- file transfer protocol (FTP)
- internet
- profiling tools
- required SEO software
- client requirements documentation
- social network marketing logins
- applicable online tools, reports and web hosting statistics.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB444 Create responsive website layouts

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to scope web page requirements and to create and implement designs according to client requirements. Clients in this instance refers to internal and external individuals.

The unit applies to individuals working as web designers and web developers, who apply a wide range of knowledge and skills in basic web development for internal and external clients.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify main layout sections from design specification	1.1 Identify website scope, functionality and design specifications according to business requirements 1.2 Consult with clients and confirm required sections of web page 1.3 Create web page structure according to organisational procedures
2. Layout web page according to design specification	2.1 Select and position document elements 2.2 Style web page elements according to design specifications

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ELEMENT	PERFORMANCE CRITERIA
3. Test and validate layout	3.1 Test website in multiple browsers and devices 3.2 Debug website and confirm website is secure according to cyber security procedures and protocols 3.3 Validate web pages against applicable web design industry standards 3.4 Obtain client feedback and amend layout as required 3.5 Seek confirmation with required personnel and obtain client sign-off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Identifies and explores, connections between ideas and methodologies and extends knowledge of requirements
Reading	• Identifies and interprets textual information and determines and adheres to requirements
Writing	• Develops clear and well-organised material for a specific audience and conveys explicit information and requirements using precise language
Numeracy	• Takes measurements and performs web page layout calculations
Self-management	• Identifies and acts on issues contravening applicable industry standards • Takes responsibility for planning, sequencing and prioritising tasks and own workload
Problem-solving	• Addresses less predictable problems and initiates standard procedures in response to these problems, applying problem-solving processes in determining a solution
Technology	• Uses familiar digital technologies and systems to access information, search and enter data and code, present information and communicate with others, cognisant of data security and safety

Unit Mapping Information

Supersedes and is equivalent to ICTWEB414 Design simple web page layouts.

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Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB444 Create responsive website layouts

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design a web page according to client design specifications.

In the course of the above, the candidate must:

- lay out page elements and style accordingly
- test web pages on at least two browsers and at least two devices
- obtain client sign-off.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- standard web design principles
- principles and components used in website development:
  - cascading style sheets (CSS)
  - hypertext transfer protocol (HTTP)
  - a markup language, including hypertext markup language (HTML)
  - web libraries
  - web frameworks
- web design and development standards, including:
  - organisational standards
  - World Wide Web Consortium (W3C) standards
  - WCAE
- cyber security procedures and protocols.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- required hardware and its components
- client design specifications brief
- a variety of browsers and digital devices
- required libraries and frameworks
- website testing and debugging tools
- the internet
- required web design software.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB445 Implement content management systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to create and integrate a website into an open-source content management system.

The unit applies to individuals working as web developers, who apply a wide range of knowledge and skills across ICT, to support small to medium enterprises (SMEs) requiring broader rather than more specialised, ICT support.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Analyse specifications and requirements	1.1 Identify required functionality of website 1.2 Determine server-side language required in website production 1.3 Establish content structure and navigation of website 1.4 Identify pre-existing restraints and standards requiring consideration when developing a website solution
2. Research solutions and create a content management system powered website	2.1 Research solutions according to website requirements, including programming language, content management system (CMS), licensing structure and hosting structure 2.2 Select content management system according to research conducted and website requirements

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ELEMENT	PERFORMANCE CRITERIA
	2.3 Fulfil website requirements using plug-ins and additions to existing content management system 2.4 Install and configure chosen CMS and required plugins 2.5 Insert and manage, website content 2.6 Back up CMS as required
3. Validate and evaluate final website	3.1 Validate final website markup against website standards 3.2 Test content management system performance in different browsers and digital devices, checking compatibility and core content management system functionality 3.3 Confirm final website is secure and bug free according to cyber security procedures and protocols 3.4 Confirm website requirements have been met and obtain sign off from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Learning	• Determines client requirement solutions through research, analysis and validating information • Extends knowledge by building on prior knowledge
Reading	• Identifies, analyses and evaluates industry standards, workplace instructions, online and other technical documentation and determines all business requirements
Writing	• Develops clear and well-organised material for a specific audience and conveys explicit information requirements and recommendations using precise language
Self-management	• Takes personal responsibility for following explicit and implicit requirements for licencing policies, procedures and regulatory requirements • Takes responsibility for planning, sequencing and prioritising tasks and own workload
Problem-solving	• Makes routine decisions and implements standard procedures for routine tasks, using formal decision- making processes for more complex and non-routine situations • Addresses less predictable problems and initiates standard procedures in response to these problems, applying problem-solving processes in

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SKILL	DESCRIPTION
	determining solutions
Technology	• Uses familiar digital technologies and systems to access information, search and enter, data and code, present information and communicate with others, cognisant of data security and safety

Unit Mapping Information

Supersedes and is equivalent to ICTWEB416 Customise content management system.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB445 Implement content management systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- create a content management system (CMS) powered website using an open-source solution.

In the course of the above, the candidate must:

- validate CMS against standards set by the World Wide Web Consortium (W3C)
- test compatibility of website on at least two different browsers and at least two different digital devices
- confirm website is cyber safe
- obtain sign off from required personnel.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- content management systems and additions and plugins requirements
- website content structure and navigation
- licensing and hosting structures
- programming languages
- markup languages and associated standards
- server-side language and security techniques
- web content accessibility guidelines, including World Wide Web Consortium (W3C) standards and their application to website development
- content management system (front and backend) in commonly used browsers
- cyber security procedures and protocols.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- client requirements and content
- text editing software
- browsers
- required hardware, software and a range of digital devices
- a website
- content management system
- required solutions
- the internet.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB446 Integrate social web technologies

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to develop and integrate social networking code into new and existing websites.

The unit applies to individuals working as web developers who apply a wide range of knowledge and skills across a range of general information and communications technology (ICT) environments and support small to medium enterprises (SMEs) requiring broader, rather than more specialised, ICT support.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Analyse specifications and requirements	1.1 Evaluate different popular social networking websites 1.2 Discuss benefits and negative aspects of social networking in websites 1.3 Identify objectives and target audience of new or existing website 1.4 Select social networking website requiring integration into website according to website analysis and client requirements 1.5 Establish goals and define successful social networking integration according to client requirements
2. Develop code and	2.1 Establish methods in implementing social networking in a

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ELEMENT	PERFORMANCE CRITERIA
documentation	website and develop guidelines according to client requirements 2.2 Develop code and use pre-existing scripts and tools, according to client requirements 2.3 Integrate a social networking website into a new or existing website using developed code, pre-existing scripts and tools 2.4 Document changes made in social web technology integration process 2.5 Follow social media policies considering company reputation
3. Validate integration	3.1 Validate performance of social networking integration in different browsers and various digital devices, checking compatibility and display 3.2 Debug website according to cyber security procedures and protocols 3.3 Broadcast website across various channels and build web audience using social web technologies 3.4 Evaluate audience reach and impact 3.5 Obtain client feedback and make required changes 3.6 Complete documentation and obtain sign off and approval from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Analyses and consolidates information and data, from a range of sources, against defined criteria and requirements and checks accuracy and completeness
Writing	• Develops clear and well-organised material for a specific audience, using precise language and conveys explicit information requirements and recommendations
Oral Communication	• Determines and confirms client requirements using collaborative and inclusive techniques, including active listening and questioning and reading of verbal and non-verbal signals
Teamwork	• Selects and uses applicable conventions and protocols when communicating with clients in a range of work contexts
Problem-solving	• Makes routine decisions and implements standard procedures for routine tasks using formal decision- making processes for more

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SKILL	DESCRIPTION
	complex and non-routine situations • Addresses less predictable problems and initiates standard procedures in response to these problems, applying problem-solving processes in determining a solution
Self-management	• Takes responsibility for planning, sequencing and prioritising tasks and own workload
Technology	• Uses familiar digital technologies and systems, to access information, search and enter, data and code, present information and communicate with others, cognisant of data security and safety

Unit Mapping Information

Supersedes and is equivalent to ICTWEB417 Integrate social web technologies.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB446 Integrate social web technologies

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- integrate a social networking website into an existing website according to website analysis and client requirements.

In the course of the above, the candidate must:

- analyse integration requirements of a social networking website into a pre-existing website
- confirm website functionality against programming and security standards
- validate front end code markup, against standards set by the World Wide Web Consortium (W3C)
- confirm integrated website is functional and compatible with at least two different browsers and at least two different digital devices
- confirm website is cyber secure and safe
- document all changes and obtain sign-off from required personnel.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- markup language and its associated standards
- server-side language features
- social networking websites
- coding and documentation techniques applicable to integrating social web technologies
- integration tools across different social media channels
- social media policies relevant to integrating social web technologies
- evaluation techniques of integrating social networking into websites and audience impact.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- client specifications
- a text editor or web authoring tool
- a range of browsers and devices
- the internet
- required hardware, software and its components including pre-existing scripts and tools
- debugging tools
- application programming interface (API) documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB447 Build basic website using development software and ICT tools

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to build a basic website, consistent with the design, technical requirements and expectations, of a client's business, using industry standard software and tools.

The unit applies to individuals working as web developers who use a wide range of knowledge and skills across a range of general information and communications technology (ICT) environments and support small to medium enterprises (SMEs) requiring broader, rather than more specialised, ICT support.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Analyse website structure and select required software and development tools	1.1 Analyse client specifications and select required development software according to business requirements 1.2 Identify website technical needs and select applicable software tools 1.3 Identify and confirm website design including structure and navigation flow and document according to organisational procedures

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Review design documentation and integrate design work according to web development standards
2. Construct site	2.1 Build website using selected development software and applicable tools according to client specifications 2.2 Take action and confirm user input during website construction 2.3 Validate existing information and basic content when incorporating data on website 2.4 Apply consistent design specifications to all aspects of website 2.5 Gather feedback from user on web design, content, accessibility and structure, using feedback mechanisms
3. Complete and validate website construction and content	3.1 Undertake an evaluation of website against technical requirements and design specification 3.2 Test each function and process of website and confirm functionality on various browsers and devices 3.3 Conduct navigation tests and hypertext markup language (HTML) compliance with website standards 3.4 Test and debug website according to cyber security procedures and protocols 3.5 Stress test website and confirm design criteria and user load are met 3.6 Record testing results and confirm website meets user requirements 3.7 Obtain sign-off and approval of required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Critically analyses complex documentation from a variety of sources and consolidates information relating to specific criteria to determine requirements
Writing	• Prepares and produces dynamic material for a specific audience, using clear and detailed language and conveys explicit information, requirements and recommendations

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SKILL	DESCRIPTION
Teamwork	• Selects and uses applicable conventions and protocols when communicating with clients in a range of work contexts • Establishes a sense of connection and builds rapport with clients and co-workers using a range of strategies
Problem solving	• Makes routine decisions and implements standard procedures for routine tasks, using formal decision-making processes for more complex and non-routine situations • Addresses less predictable problems and initiates standard procedures in response to these problems, applying problem-solving processes in determining a solution
Self-management	• Accepts responsibility and ownership for task and makes decisions on completion parameters and need for coordination with others • Takes personal responsibility for following explicit and implicit policies, procedures and standards • Elicits and provides feedback to others • Takes responsibility for planning, sequencing and prioritising tasks and own workload
Technology	• Uses familiar digital technologies and systems to access information, search and enter data and code, present information and communicate with others, cognisant of data security and safety

Unit Mapping Information

Supersedes and is equivalent to ICTWEB418 Use development software and ICT tools to build a basic website.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB447 Build basic website using development software and ICT tools

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- build a basic website using development software and ICT tools according to client specifications.

In the course of the above, the candidate must:

- conduct an assessment of specifications relating to client website requirements including technical needs and structure
- select applicable software tools
- validate final web design against client requirements and make changes as required
- test and debug website and confirm functionality on at least two different browsers and at least two different devices
- document testing results and obtain client sign off.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- website functionality including structure and navigation flow
- website design principles issues around accessibility and equity principles
- software and tools used in website development
- general principles of hypertext markup language (HTML) and associated documentation standards
- technical attributes specific to building basic websites using development software and ICT tools
- documentation techniques applicable to building basic websites using development software and ICT tools
- types of code used in website generation

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- testing and debugging methodologies
- organisational and industry procedures and standards applicable to building websites
- cyber security procedures and protocols
- web development standards.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- basic website specifications and guidelines
- website development software and tools
- the internet
- required hardware and its components
- range of browsers and devices.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB448 Confirm website content meets technical protocols and standards

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to confirm content for a website is in accordance with customer specifications and is compatible with required technical and infrastructure protocols.

The unit applies to individuals working in the web development area who are required to populate websites according to clear benchmarks.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Confirm content meets required standards	1.1 Identify client website requirements and applicable style standards according to specifications 1.2 Confirm text-based content meets client requirements and required style standards 1.3 Confirm multimedia-based content meets business design standards and overall look of website 1.4 Check whether mix between multimedia and text-based content, provides required level of interaction identified in client requirements 1.5 Test content and conform to client expectations and technology

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ELEMENT	PERFORMANCE CRITERIA
2. Confirm technology supports content	2.1 Confirm availability of applicable multimedia content protocols 2.2 Check and confirm content bandwidth and content plug-ins are available 2.3 Confirm servers support content and levels of interaction 2.4 Test and confirm compression techniques support delivery of content
3. Test content	3.1 Test and confirm content displays as intended and according to business requirements in multiple browsers and devices 3.2 Confirm content encourages interaction and content interaction performs as intended through testing with beta users 3.3 Record and document results of beta user testing according to organisational requirements 3.4 Test and confirm plug-ins download with minimal steps, complication and time 3.5 Test availability of interactive tools and provide expected results 3.6 Test and debug website and confirm website is safe and secure, according to cyber security procedures and protocols 3.7 Complete documentation and obtain sign-off from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Time technological processes using basic mathematical formula
Reading	• Identifies and analyses online information and client specifications and confirms business requirements are met
Writing	• Documents outcomes of tests using industry terminology and recognised symbols
Teamwork	• Selects and uses applicable conventions and protocols when communicating with clients and co-workers in a range of work contexts
Problem solving	• Makes routine decisions and implements standard procedures for routine tasks, using formal decision-making processes for more complex and non-routine situations
Self-management	• Takes personal responsibility for following explicit and implicit

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SKILL	DESCRIPTION
	policies, procedures and specifications • Improves work practices and processes and elicits feedback and provides feedback to others, • Takes responsibility for planning, sequencing and prioritising tasks and own workload
Technology	• Uses familiar digital technologies and systems to access information, search and enter, data and code, present information and communicate with others, cognisant of data security and safety

Unit Mapping Information

Supersedes and is equivalent to ICTWEB421 Ensure website content meets technical protocols and standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB448 Confirm website content meets technical protocols and standards

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- carry out checks and tests and confirm specifications and standards are met for a mix of website content including:
  - at least three multimedia items
  - at least three text-based content.

In the course of the above, the candidate must:

- check and use required streaming and compression techniques
- confirm website content is support by technology, including bandwidth, servers, devices and plug-ins
- manage file transfer protocols (FTPs)
- test and confirm functionality and operability of content and interactive components, on at least two different browsers and at least two different devices
- confirm website is cyber safe and secure
- document testing performed and obtain sign-off from required personnel.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- applicability of copyright, privacy and intellectual property to website development
- industry standard software compression algorithms and associated technologies
- file transfer protocol (FTP) software protocols
- internet protocols
- server access security principles and procedures
- server operating systems
- streaming technologies

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- website testing and debugging methodologies
- documentation techniques, style and business design standards applicable to confirming website content meets technical protocols and standards
- multimedia content protocols
- organisational and cybersecurity procedures and protocols.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- client specifications document
- documents detailing organisational style guide and policies and design brief
- required hardware and its components and plug-ins
- industry standard software and included interactive tools
- compression and streaming software
- the internet
- a live network and its components
- networked computers
- technical documentation and installation manuals
- multiple servers, browsers and devices.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB449 Confirm website access and useability

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to apply the principles of accessibility, useability, privacy and equity in the context of website development.

The unit applies to individuals who provide frontline technical support for ensuring websites are accessible and useable to end users.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify user requirements and design site user test	1.1 Identify and confirm user expectations through market analysis, business intelligence and customer feedback 1.2 Identify range of users on website and their needs and expectations 1.3 Assess website performance and establish performance potential of website from business requirements and other approved sources 1.4 Establish usability test methods according to business and website requirements and accessibility standards 1.5 Establish performance measurement and success criteria and measure actual performance against user expectations
2. Conduct user test	2.1 Document process performance indicators and benchmarks

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ELEMENT	PERFORMANCE CRITERIA
	and disseminate them to a sample group of users 2.2 Assemble a full representative range of users and required technologies according to research conducted 2.3 Test site features, navigation and functions according to organisational procedures, policies and user needs 2.4 Confirm website's intended functionality on various browsers and devices 2.5 Confirm user, legal, accessibility, privacy and equity requirements and expectations are met
3. Evaluate user test	3.1 Collate and document site useability testing performance results and measure them against performance indicators and benchmarks according to user expectations 3.2 Identify performance shortfalls and develop performance solutions according to business and user requirements 3.3 Establish evaluation feedback mechanism and provide to users
4. Document results	4.1 Discuss problems with developers and confirm solutions are continuously refined 4.2 Check and confirm proposed solutions meet user and business requirements and address user feedback 4.3 Document and implement final solutions according to organisational procedures and policies and distribute to required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Performs mathematical calculations and analyses test and performance data and statistics
Oral communication	• Confirms requirements, participates in a verbal exchange of ideas/solutions and uses applicable, detailed and clear language and addresses key personnel and website users
Reading	• Analyses and consolidates information and data from a range of sources against defined criteria and requirements and checks accuracy and completeness
Writing	• Records information and prepares correspondence and documentation, using clear language and organisational formats and protocols

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SKILL	DESCRIPTION
Teamwork	• Selects and uses applicable conventions and protocols when communicating with clients and co-workers in a range of work contexts
Problem solving	• Addresses less predictable problems and initiates standard procedures in response to these problems, applying problem-solving processes in determining solutions
Self-management	• Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements • Elicits feedback and provides feedback to others while testing usability • Takes responsibility for planning, sequencing and prioritising tasks and own workload
Technology	• Uses familiar digital technologies and systems to access information, search and enter data and code, present information and communicate with others, cognisant of data security and safety

Unit Mapping Information

Supersedes and is equivalent to ICTWEB422 Ensure website access and useability.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB449 Confirm website access and useability

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- test and evaluate a website in terms of accessibility and useability, according to business and user requirements.

In the course of the above, the candidate must:

- research various user needs and expectations in website
- design a usability test and set benchmark metrics
- facilitate test process and document results
- confirm user and legal requirements are met
- document and propose solutions according to user and business needs.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- accessibility, privacy and equity principles in website development context
- accessibility needs and requirements
- market conditions for area of business
- technical performance measurement of typical web site
- user testing principles and techniques
- features and functions of a website, including:
  - architecture
  - privacy
  - security
  - navigation
- workload metrics and implications for website design

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- organisational policies and procedures relating to website functionality
- documentation techniques applicable to confirming website access and usability.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- required hardware and its components
- industry standard analysis software
- a website
- organisational policy and procedures
- user specifications
- a site server and software
- web servers and devices.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB450 Evaluate and select a web hosting service

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to determine a client's current and future internet service providers (ISPs) needs.

The unit applies to individuals working in Information and Communications Technology (ICT) who take responsibility for comparing and evaluating internet service provider (ISP) services.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify requirements and select ISP	1.1 Discuss and confirm web hosting service requirements and establish client selection criteria according to business and user needs 1.2 Review client usage and confirm email services are compliant with business needs 1.3 Review characteristics of different hosting services and assess compatibility with business needs 1.4 Evaluate optional server applications for advanced web business functions 1.5 Select ISP hosting service according to client selection criteria and business needs

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ELEMENT	PERFORMANCE CRITERIA
2. Confirm web host meets technical requirements	2.1 Confirm web-hosting service has server performance and availability monitoring systems in place 2.2 Discuss and confirm escalation procedures and performance standards with ISP 2.3 Establish security, backup and payment procedures and technologies according to business and customer expectations and requirements 2.4 Confirm operating system supports preferred business development software, applications, extensions and databases 2.5 Check and confirm web-host servers support dynamic websites on various browsers, devices and preferred business technologies 2.6 Confirm site-analysis reports are available, flexible and meet business needs
3. Benchmark performance and test against specified criteria	3.1 Test performance of web hosting service during on and off-peak times and document outcomes according to organisational procedures 3.2 Confirm email and mailing services have backup procedures in place and are protected from damage, erasure and unwanted damage 3.3 Confirm support services perform according to business needs 3.4 Discuss and confirm performance of selected ISP against specified criteria and make required changes 3.5 Obtain sign-off from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Reads and interprets specifications, computer program interface and documentation from a variety of sources and consolidates information
Writing	• Prepares documentation expressing ideas and explores complex issues
Oral Communication	• Confirms interpretation of all business requirements using listening and questioning techniques and uses detailed and clear language to address client and ISP personnel

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SKILL	DESCRIPTION
Numeracy	• Estimates data storage requirements using mathematical formulas
Interact with others	• Selects and uses applicable conventions and protocols when communicating with clients and co-workers in a range of work contexts
Self-management	• Takes responsibility for planning, sequencing and prioritising tasks and own workload
Problem-solving	• Makes routine decisions and implements standard procedures for routine tasks, using formal decision-making processes for more complex and non-routine situations • Addresses less predictable problems and initiates standard procedures in response to these problems, applying problem-solving processes in determining a solution
Technology	• Uses familiar digital technologies and systems to access information, search and enter, data and code, present information and communicate with others, cognisant of data security and safety

Unit Mapping Information

Supersedes and is equivalent to ICTWEB424 Evaluate and select a web hosting service.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB450 Evaluate and select a web hosting service

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- evaluate and select a web hosting service according to business and user needs.

In the course of the above, the candidate must:

- assess client and business needs and establish selection criteria
- identify and evaluate a range of web hosting services
- confirm business and client budgetary, security and technical requirements are met
- test and benchmark web hosting service with client benchmarks
- obtain sign-off from required personnel.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- different web hosting service provision options
- web hosting service characteristics including:
  - support service standards
  - data capacity
  - security technologies and procedures
  - scripting languages
  - performance monitoring systems
  - escalation procedures
  - back up procedures
  - payment procedures
- email and mailing list services

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- a range of hosting services and their characteristics including support service standards, data capacity and availability of security technologies and server-side languages
- industry standard development software, applications, extensions and databases
- internet security issues
- operating systems used by ISPs
- server technologies
- documentation techniques used to evaluate and select a web hosting service
- web hosting services and performance benchmarks
- ISP performance testing methodologies
- organisational procedures applicable to selecting a web hosting service.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- industry standard web hosting plans, prices and service agreements
- technology underpinning ISP and services offered
- a business plan outlining business requirements
- user requirements
- multiple browsers and devices
- site analysis reports
- required hardware, software and its components.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB451 Apply structured query language in relational databases

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to produce structured query language (SQL) statements to work with server-side scripts, enabling web developers to interact with web server databases.

The unit applies to individuals in a range of roles who are responsible for creating server-side interaction with dynamic web pages, using SQL as a means of communicating with databases.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify database requirements	1.1 Determine information required from database 1.2 Identify tables holding this information 1.3 Identify primary keys in these tables 1.4 Identify relationships between these tables including foreign keys
2. Build and implement SQL in relational databases	2.1 Identify and build SQL statements according to task requirements 2.2 Create tables in a database using SQL statements 2.3 Create primary and foreign keys required in database

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ELEMENT	PERFORMANCE CRITERIA
	table 2.4 Manipulate data in a database using SQL statements 2.5 Query database using SQL statements 2.6 Retrieve information from database using written SQL statements
3. Test and verify SQL results	3.1 Construct test data and test SQL statements according to organisational procedures 3.2 Determine expected results of SQL statements 3.3 Verify result of constructed SQL statements against expected results and document findings 3.4 Confirm task requirements are met and obtain sign-off from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Analyses and consolidates information and data from a range of sources, against defined criteria and requirements
Writing	• Uses clear and specialised technical syntax when creating codes and interrogating databases • Prepares and produces, diagrammatic models and associated documents and conveys complex relationships between data
Self-management	• Takes responsibility for planning, sequencing and prioritising tasks and own workload
Problem-solving	• Makes routine decisions and implements standard procedures for routine tasks, using formal decision-making processes for more complex and non-routine situations • Addresses less predictable problems and initiates standard procedures in response to these problems, applying problem-solving processes in determining a solution
Technology	• Uses familiar digital technologies and systems to access information, search and enter, data and code, present information and communicate with others, cognisant of data security and safety

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Unit Mapping Information

Supersedes and is equivalent to ICTPRG425 Use structured query language and ICTWEB425 Apply structured query language to extract and manipulate data.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB451 Apply structured query language in relational databases

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- apply structured query language (SQL) to a relational database and gather required information according to task requirements.

In the course of the above, the candidate must:

- generate queries for one or more tables and provide required data
- add, modify, retrieve and delete records from database tables as required test and verify SQL statements.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- organisational policies and procedures relating to SQL application including:
  - identifying SQL requirements from job specifications
  - testing and verifying SQL results
- features and application of primary and foreign keys in database tables, aggregate functions and clause functions required in SQL application
- principles of "combining and/or condition" in SQL statements and Boolean operators
  - IN and BETWEEN conditional operators
  - mathematical operators
  - table joins (relationships)
- documentation techniques relevant to applying structured query language in relational databases
- SQL statement testing methodologies.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- task specification documentation
- structured query language (SQL)
- industry standard software packages
- an integrated development environment (IDE)
- a database server
- required hardware, software and its component.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB452 Create a markup language document

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to use a text editor to design, create and save web pages to a given specification.

The unit applies to individuals working as web designers and developers, who generate a framework for internet information using a markup language according to client briefs.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Analyse specifications and requirements	1.1 Identify uses and audience of required document 1.2 Determine required mark-up language according to document's uses and audience 1.3 Identify and confirm required documentation according to organisational procedures 1.4 Define document structure according to organisational procedures and document requirements
2. Create document structure	2.1 Create and assign basic elements of document considering accessibility and document requirements 2.2 Markup and define sections of document and describe structure and layout according to document requirements

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ELEMENT	PERFORMANCE CRITERIA
	2.3 Confirm styling of web page meets document specifications and requirements
3. Incorporate web page components	3.1 Identify and evaluate web page components required according to document requirements3.2 Incorporate required web page components into document according to organisational procedures and guidelines
4. Validate documents	4.1 Validate markup language document against specifications and record outcomes 4.2 Validate compatibility of markup language document in different browsers and devices and record outcomes 4.3 Identify gaps between specifications and requirements and markup language document and apply changes as required, according to organisational procedures 4.4 Confirm requirements are met and finalise documentation according to organisational procedures 4.5 Obtain sign-off from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Identifies, analyses and evaluates instructions, technical information and industry guidelines and determines client needs and business requirements
Writing	• Produces documentation for a specific audience and conveys explicit information using clear and detailed language • Writes, edits and proofreads documents and confirms clarity of meaning, accuracy and consistency of information
Navigate the world of work	• Takes personal responsibility for following explicit and implicit policies, procedures and industry standard practices
Self-management	• Takes responsibility for planning, sequencing and prioritising tasks and own workload
Problem-solving	• Makes routine decisions and implements standard procedures for routine tasks, using formal decision-making processes for more complex and non-routine situations • Addresses less predictable problems and initiates standard procedures in response to these problems, applying problem-solving

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SKILL	DESCRIPTION
	processes in determining a solution
Technology	• Uses familiar digital technologies and systems to access information, search and enter, data and code, present information and communicate with others, cognisant of data security and safety

Unit Mapping Information

Supersedes and is equivalent to ICTWEB429 Create a markup language document to specification.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB452 Create a markup language document

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design, create and save a document using a markup language using a text editor

- In the course of the above, the candidate must:
- define document structure incorporate elements as required
- generate markup language document compatible with multiple web browsers and devices
- confirm document requirements are met and records all outcomes
- validate markup document against standards set by the World Wide Web Consortium (W3C)
- obtain sign-off.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- the use of markup languages including:
  - hypertext markup language (HTML)
  - virtual reality modelling language (VRML)
  - extensible markup language (XML)
- standards set by the World Wide Web Consortium (W3C) applicable to markup language
- the range of available web browsers and their accessibility
- issues applicable to accessibility
- documentation techniques, web page components and organisational procedures and guidelines relevant to creating a markup language document to specification
- document validation procedures
- browser and device compatibility.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- an organisational style guide or policy
- user requirements
- industry standard markup languages
- word processing software
- a range of browsers and devices
- the internet
- required hardware, software and its components.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB513 Build dynamic websites

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to analyse and design websites to meet technical requirements.

It applies to individuals working as web developers, who are responsible for the analysis, design, implementation and testing of websites.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Define and analyse technical requirements	1.1 Identify business requirements and applicable legislative standards 1.2 Determine and document purpose, expectations and functionality of website according to organisational procedures 1.3 Analyse user interface design requirements including user needs, design principles and operating systems
2. Produce software design specifications	2.1 Produce a hierarchy of website showing navigation according to website requirements 2.2 Confirm content is logical and accessible to user according to website requirements 2.3 Produce prototype of user interface

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ELEMENT	PERFORMANCE CRITERIA
	2.4 Determine and document website architectural requirements 2.5 Design data storage requirements according to website requirements
3. Develop website to specified design	3.1 Create software components of website according to website requirements 3.2 Test components of website according to organisational procedures 3.3 Integrate components and produce web application
4. Test and finalise web application	4.1 Test website against requirements and amend accordingly 4.2 Confirm website is secure and bug free according to cyber security procedures and protocols 4.3 Test functionality of website on multiple browsers and devices and update as required 4.4 Obtain feedback from required personnel and update web site as required 4.5 Complete and document design structure according to organisational procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Analyses complex documentation from a variety of sources and consolidates information applicable to specific criteria when determining requirements
Writing	• Prepares documentation analysing requirements and design specifications • Writes and edits code and technical data in a logical manner using the required syntax
Planning and organising	• Accepts responsibility for planning and sequencing complex tasks and workload • Negotiates key aspects with others, including required capabilities, efficiencies and effectiveness
Problem solving	• Applies systematic and analytical decision-making processes for complex situations and issues
Self-management	• Takes responsibility for following policies, procedures and standards

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SKILL	DESCRIPTION
Technology	• Uses and investigates new digital technologies and applications • Manages and manipulates data and communicates with others in a secure and stable digital environment

Unit Mapping Information

Supersedes and is equivalent to ICTWEB501 Build a dynamic website.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB513 Build dynamic websites

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- build a dynamic website using code according to technical requirements.

In the course of the above, the candidate must:

- test the website on at least two different browsers and at least two different devices
- document website requirements and actions performed
- comply with organisational requirements and legislative standards.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- principles of analysis and design
- programming control and design structures
- web programming concepts, including:
  - authentication and web security
  - hypertext transfer protocol (HTTP)
  - session management
  - stateless programming
- client-side scripting and its application to dynamic website design, including:
  - hypertext markup language (HTML)
  - cascading style sheets (CSS)
- documentation processes applicable to documenting website design
- user-interface design requirements and production processes
- website design structures, including hierarchy and navigation design
- website architectural requirements

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- data storage requirements
- website testing procedures
- debugging methods
- cyber security procedures and protocols
- organisational and legislative procedures applicable to building dynamic websites, including web development standards.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- client requirements
- a development environment
- a server
- a database server
- web browsers and devices
- hardware, software and its components required for building dynamic websites
- libraries and frameworks required for building dynamic websites
- website testing and debugging tools.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB514 Create dynamic web pages

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to produce both server and client-side content for web pages.

It applies to individuals working as web developers, who are responsible for creating dynamic pages to provide interaction between the user and the website. They use highly developed technical and analytical skills when developing the user-website interface.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to create dynamic web pages	1.1 Obtain and review technical requirements for creating dynamic web pages 1.2 Confirm applicable legislative and organisational standards and procedures applicable to technical requirements 1.3 Identify sections of website requiring client-side dynamic content 1.4 Identify sections of website requiring server-side dynamic content 1.5 Select applicable languages and technology according to technical requirements
2. Create dynamic content	2.1 Identify and create boilerplate templates according to

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ELEMENT	PERFORMANCE CRITERIA
	technical requirements 2.2 Design and create a database and organise data and content according to data storage requirements 2.3 Create page using selected languages
3. Test and finalise dynamic web pages	3.1 Debug code and confirm security of web page using cyber security protocols and procedures 3.2 Test web page functionality and content across a variety of browsers and devices 3.3 Evaluate web page functionality results and amend as required 3.4 Confirm required dynamic content functions according to task requirements 3.5 Present dynamic web page to required personnel and seek feedback 3.6 Finalise web page and obtain sign-off from required personnel, according to organisational procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Analyses documentation from a variety of sources and records and consolidates information when determining requirements
Writing	• Writes and edits code and technical data in a logical manner using required syntax
Planning and organising	• Accepts responsibility for planning and sequencing complex tasks and workload • Negotiates key aspects with others, including required capabilities, efficiencies and effectiveness
Problem solving	• Applies systematic and analytical decision-making processes for complex situations and issues
Self-management	• Takes responsibility for following policies, procedures and standards
Technology	• Uses and investigates new digital technologies and applications • Manages and manipulates data and communicates with others in a secure and stable digital environment

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Unit Mapping Information

Supersedes and is equivalent to ICTWEB502 Create dynamic web pages.

Links

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Assessment Requirements for ICTWEB514 Create dynamic web pages

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- produce at least three dynamic web pages according to technical requirements.

In the course of the above, the candidate must:

- include client and server-side dynamic content in each web page
- create and debug code
- test web page and code on at least two different web browsers and at least two different devices
- comply with organisational and legislative standards and procedures.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- web programming concepts, including:
  - authentication and web security
  - hypertext transfer protocol (HTTP)
  - session management
  - stateless programming
- types of technologies, including:
  - programming control structures
  - hypertext markup language (HTML) and markup languages
  - cascading style sheets (CSS)
  - syntax and uses of programming languages
- client and server-side scripting and its application to dynamic web page design
- data storage requirements

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- debugging methods
- coding techniques
- cyber security protocols and procedures
- legislative and organisational procedures and standards applicable to creating dynamic web pages.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- technical requirements
- a development environment
- a server
- a database server
- web browsers and devices
- web page testing and debugging tools required for creating dynamic web pages
- hardware, software and its components required for creating dynamic web pages.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB517 Create web-based programs

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to develop web applications.

It applies to individuals who work as web developers and have highly developed technical skills to take responsibility for implementing code required to create web applications.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to create web application	1.1 Identify and confirm requirements and functionality of web application with required personnel 1.2 Confirm applicable legislative and organisational standards and procedures applicable to web applications 1.3 Determine hypertext transfer protocol (HTTP) required 1.4 Analyse advantages and limitations of HTTP when developing web applications
2. Implement session management	2.1 Create code and handle session management 2.2 Create code and retains user interaction with website 2.3 Review and debug created code

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ELEMENT	PERFORMANCE CRITERIA
3. Develop and finalise applications in a stateless environment	3.1 Develop web applications that keep track of data between browser requests 3.2 Document work performed in web application with reference to its management of statelessness 3.3 Seek feedback on web application with required personnel and amend as required

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Identifies and analyses code for syntax and accuracy
Writing	• Prepares documentation detailing testing and work performed on web application succinctly • Writes and edits code and technical data in a logical manner using required syntax
Planning and organising	• Accepts responsibility for planning and sequencing complex tasks and workload • Negotiates key aspects with others, including required capabilities, efficiencies and effectiveness
Problem solving	• Applies systematic and analytical decision-making processes for complex situations and issues
Technology	• Uses and investigates new digital technologies and applications • Manages and manipulates data and communicates with others in a secure and stable digital environment

Unit Mapping Information

Supersedes and is equivalent to ICTWEB503 Create web-based programs.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB517 Create web-based programs

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop a web application in a stateless environment according to technical requirements.

In the course of the above, the candidate must:

- confirm user data is tracked in web application
- document testing and work performed on web application
- confirm web application is functional on at least two browsers and at least two devices.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- principles of web analysis and design
- features and functionalities of different web applications
- programming control structures and applicable languages
- code debugging techniques
- web application development process
- legislative and organisational requirements applicable to creating web applications
- web programming concepts including:
  - authentication and web security
  - hypertext transfer protocol (HTTP)
  - session management
  - stateless programming
- web front end and backend languages, including:
  - hypertext markup language (HTML)
  - cascading style sheets (CSS)

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  - JavaScript
- organisational procedures applicable to creating web applications.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a website development environment
- a server
- a database server
- web browsers and digital devices
- hardware required to create web applications.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB518 Build a document using extensible markup language

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to design and build an extensible markup language (XML) document.

It applies to individuals who work in development roles and have highly developed technical skills in using XML documents.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish and analyse document specifications	1.1 Identify and confirm applicable legislative and organisational standards and procedures applicable to XML document development 1.2 Determine and document purpose, expectations and functionality of an XML document 1.3 Plan, design and build XML documentation, allowing for iterative development according to task requirements 1.4 Determine software and tools required to design an XML document 1.5 Identify and determine applicable design methodologies including the use of software engineering life cycle

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ELEMENT	PERFORMANCE CRITERIA
2. Design and develop document	2.1 Select the document type definition (DTD) according to document specifications 2.2 Define required entities, elements and their attributes specifications 2.3 Produce XML document according to organisational requirements 2.4 Identify the DTD, required entities, elements and their attributes, including associated graphics and sounds
3. Test and finalise document	3.1 Test document offline and confirm validity of document according to document specifications 3.2 Test document online with representative audiences, where applicable 3.3 Confirm document validity and content on various browsers and devices 3.4 Analyse test results and update the XML documentation as required

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Analyses specifications and other documentation from a variety of sources, and consolidates information when determining requirements
Planning and organising	• Accepts responsibility for planning and sequencing complex tasks and workload • Negotiates key aspects with others, including required capabilities, efficiencies and effectiveness
Problem solving	• Applies systematic and analytical decision-making processes for complex situations and issues
Self-management	• Takes responsibility for following policies, procedures and industry standards
Technology	• Uses and investigates new digital technologies and applications • Manages and manipulates data, and communicates with others in a secure and stable digital environment

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Unit Mapping Information

Supersedes and is equivalent to ICTWEB504 Build a document using extensible markup language.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB518 Build a document using extensible markup language

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- produce at least two (extensible markup language) XML documents according to technical requirements.

In the course of the above, the candidate must:

- test and validate XML document on at least two different browsers and at least two different devices
- comply with applicable organisational policies, procedures and standards.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- extensible markup language
- unified-modelling language
- software implications for XML programming
- standards impacting XML programming
- design methodologies including software engineering life cycle
- document type definition (DTD)
- XML document components including entities, elements and their attributes
- debugging methods
- document validation and testing procedures
- organisational policies, procedures and standards applicable to building XML documents.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- the client or business requirements
- an XML parser and authoring tool
- web browsers and devices
- hardware, software and tools required to use extensible markup language.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB519 Develop complex web page layouts

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to design and create a web page layout to suit a range of browsers and devices.

It applies to individuals who work as web designers and web developers and have a highly developed understanding of design principles and applies technical skills proficiently, according to unique specifications.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to develop web page layout	1.1 Identify and confirm applicable legislative and organisational standards and procedures applicable to webpage layout development 1.2 Identify main sections of web page design 1.3 Identify main sections of web page layout

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ELEMENT	PERFORMANCE CRITERIA
2. Build, test and validate web page layout	2.1 Create web page structure according to design specifications 2.2 Position and style web page elements according to design specifications 2.3 Create cascading style sheet and web page according to design specifications 2.4 Test design and functionality of web page in various browsers and devices 2.5 Amend browser and device incompatibilities according to organisational procedures 2.6 Debug and confirm security of web page using cyber security procedures and protocols
3. Finalise web page layout	3.1 Confirm accessibility of web sections, elements and pages 3.2 Seek feedback from required personnel and amend layout as required 3.3 Obtain sign-off and confirmation from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Takes measurements and performs calculations for web page layout
Reading	• Critically analyses specifications and other documentation from a variety of sources and consolidates information when determining requirements
Writing	• Develops organised technical material for specific audiences using required language
Planning and organising	• Accepts responsibility for planning and sequencing complex tasks and workload • Negotiates key aspects with others, including required capabilities, efficiencies and effectiveness
Problem solving	• Applies systematic and analytical decision-making processes for complex situations

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SKILL	DESCRIPTION
Self-management	• Takes responsibility for following policies, procedures and industry standards
Technology	• Uses and investigates new digital technologies and applications • Manages and manipulates data, and communicates with others in a secure and stable digital environment

Unit Mapping Information

Supersedes and is equivalent to ICTWEB505 Develop complex web page layouts.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB519 Develop complex web page layouts

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop at least two complex website layouts according to technical requirements.

In the course of the above, the candidate must:

- lay out and style page elements to suit a variety of devices
- test web page layouts in at least two different browsers and at least two different devices
- validate web page layouts against industry standards.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- principles of web site design and web scripting design
- principles and techniques in web site design, including:
  - hypertext markup language (HTML)
  - extensible hypertext markup language (XHTML)
  - cascading style sheets (CSS)
  - hypertext transfer protocol (HTTP)
  - amending browser incompatibilities
  - web libraries
  - web frameworks
- industry procedures, policies and standards applicable to developing web page layouts
- web page testing and debugging procedures
- accessibility standards, including the World Wide Web Consortium (W3C) standards and their application to web design
- cyber security procedures and protocols applicable to developing web page layouts

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- organisational procedures applicable to developing web page layouts.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- hardware, software and its components required to develop complex web pages
- design specifications brief
- a variety of browsers and digital devices
- the internet
- web page testing and debugging tools required to test complex web pages.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB520 Develop complex cascading style sheets

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to develop complex cascading style sheets (CSS) that are attached to a markup language document.

It applies to individuals working as web designers and developers, who are involved in the layout and appearance of web pages have a highly developed understanding of design principles and software languages and can apply protocols and standards proficiently.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine CSS requirements	1.1 Identify and confirm applicable legislative and organisational standards and procedures applicable to CSS development 1.2 Identify and review user style requirements 1.3 Evaluate and select applicable markup language according to technical requirements
2. Develop CSS and web pages	2.1 Create CSS according to technical requirements 2.2 Style, lay out and position document elements of web page using advanced CSS techniques 2.3 Apply style sheets to applicable web pages in a website
3. Test and validate CSS	3.1 Debug web page and CSS and confirm security using cyber

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ELEMENT	PERFORMANCE CRITERIA
and web pages	security procedures and protocols 3.2 Test website in various browsers and devices 3.3 Rectify browser and device differences and confirm accessibility of website 3.4 Confirm user requirements are met and obtain sign-off from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Takes measurements and performs calculations for web page layout
Oral communication	• Uses listening, questioning and summarising techniques to clarify job specifications with required personnel
Reading	• Identifies and analyses technical, workplace and industry information, and confirms all job requirements are met
Writing	• Develops organised technical material for specific audiences using required language
Planning and organising	• Accepts responsibility for planning and sequencing complex tasks and workload • Negotiates key aspects with others, including required capabilities, efficiencies and effectiveness
Problem solving	• Applies systematic and analytical decision-making processes for complex situations
Self-management	• Takes responsibility for following policies, procedures and industry standards
Technology	• Uses and investigates new digital technologies and applications • Manages and manipulates data, and communicate with others in a secure and stable digital environment

Unit Mapping Information

Supersedes and is equivalent to ICTWEB506 Develop complex cascading style sheets.

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Assessment Requirements for ICTWEB520 Develop complex cascading style sheets

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop a complex website, styled and formatted, using cascading style sheets (CSS) according to technical requirements.

In the course of the above, the candidate must:

- create a complex page layout using CSS
- test web pages in at least two different browsers and on at least two different devices
- comply with industry and organisational standards and procedures.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- principles of website design
- hypertext transfer protocol (HTTP) protocol and its application to CSS
- hypertext markup language (HTML) and extensible hypertext markup language (XHTML)
- CSS rules and standards impact on document styling and layout
- methods in applying style sheets to web pages
- website accessibility requirements, including World Wide Web Consortium (W3C) standards
- website testing and debugging methods
- techniques to amend browser incompatibilities
- organisational procedures applicable to developing CSS
- cyber security procedures and protocols.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- hardware, software and its components required to use complex CSS
- design specifications brief
- applicable markup language
- markup language documents to have CSS applied to them
- the internet
- a variety of browsers and digital devices
- web page testing and debugging tools required for testing web pages.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB521 Customise complex ICT content management systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to create and customise an Information and Communications Technology (ICT) content management system (CMS) powered website using an open source to meet client requirements.

It applies to individuals working as web developers, who have a detailed knowledge of markup languages and their associated standards and are proficient in server-side language and security techniques. Individuals in this role also have high-level understanding of server functionality.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and analyse client specifications and requirements	1.1 Gather and identify client and business requirements 1.2 Compare and analyse different CMS functionalities, restraints and requirements against client specifications 1.3 Select CMS according to client and business requirements 1.4 Identify, discuss and confirm additional areas and functions not covered by chosen CMS with required personnel

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ELEMENT	PERFORMANCE CRITERIA
2. Develop customisation and create CMS powered website	2.1 Plan and outline requirements of additional functionality according to technical requirements 2.2 Create and develop plug-in, extension or new functionality to CMS according to identified task requirements 2.3 Seek feedback from required personnel on created developed plug-in, extension or new functionality to CMS and amend as required 2.4 Install and configure chosen content management system 2.5 Install and integrate new CMS functionality according to vendor requirements
3. Validate and evaluate website	3.1 Validate final website markup against organisational website and security standards 3.2 Evaluate and confirm required CMS performance, compatibility and core functionality in different browsers and devices 3.3 Confirm additional functionality developed meets client requirements 3.4 Obtain sign-off on final CMS powered website from required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Oral communication	• Uses listening and questioning techniques to determine client requirements and articulate ideas using specific language applicable to audience
Reading	• Analyses complex specifications, program manuals and other documentation from a variety of sources, and consolidates information to determine requirements
Writing	• Creates a CMS powered website for specific audiences using required language
Planning and organising	• Accepts responsibility for planning and sequencing complex tasks and workload • Negotiates key aspects with others, including required capabilities, efficiencies and effectiveness

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SKILL	DESCRIPTION
Problem solving	• Applies systematic and analytical decision-making processes for complex situations
Self-management	• Takes responsibility for following policies, procedures and industry standards
Technology	• Uses and investigates new digital technologies and applications • Manages and manipulates data and communicates with others in a secure and stable digital environment

Unit Mapping Information

Supersedes and is equivalent to ICTWEB507 Customise a complex ICT content management system.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB521 Customise complex ICT content management systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- create a content management system (CMS) powered website, using an open source with at least two additional custom functionalities not available from CMS, according to technical requirements.

In the course of the above, the candidate must:

- perform basic content manipulation tasks on at least two different browsers and at least two different devices
- evaluate additional content management functionality required against programming and security standards
- customise functionalities into pre-existing core CMS using programming techniques
- validate front-end code markup against standards set by the World Wide Web Consortium (W3C)
- confirm final website is cyber secure and complies with cyber security procedures and protocols.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- different content management systems and their respective functionalities, restraints and requirements
- different markup languages and their applicable standards
- customisation creation processes, including development of plug-in’s and extensions and programming techniques
- CMS vendor requirements, installation and configuration processes
- client and business specifications and requirements, including:

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  - server functionality
  - required functionality of website
  - required server-side language and application processes and hosting environment
  - pre-existing restraints applicable to developing website solutions
- website, web accessibility, programming and security standards applicable to customising CMS
- website validation processes
- cyber security procedures and protocols.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- client and business specifications, requirements and content
- content management system required to customise complex CMS
- hardware, software and its components applicable to developing and installing CMS customisations
- a text editor
- a range of browsers and digital devices
- the internet and its connectivity.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB522 Develop website information architecture

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to develop information architecture for a complex website that meets business requirements.

It applies to individuals working as highly skilled web developers and designers and are responsible for the navigation and hierarchy of websites. They liaise with clients to adapt e-business into their corporate strategy, applying high-level knowledge of technical languages and design principles.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify content needs	1.1 Identify strategic intent of website from business requirements and client expectations 1.2 Define information and content requirements according to websites intent, intended audiences, types of client interactions and the websites long and short-term goals 1.3 Collate required information and content and group into business schemes applicable to business structure and processes 1.4 Identify website security access requirements
2. Plan content structure	2.1 Cluster and document information and content in related topics 2.2 Develop a hierarchy and site map of information and content

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ELEMENT	PERFORMANCE CRITERIA
	2.3 Check data and confirm sequence of hierarchy 2.4 Confirm labels are accessible to client
3. Develop navigation system and create prototype	3.1 Build website navigation system according to business requirements 3.2 Confirm ease and accessibility of navigation on website and provide different ways of searching 3.3 Construct prototype of information architecture design
4. Test and sign off	4.1 Arrange for client and required personnel to test usability of prototype and determine if architecture meets client expectations 4.2 Confirm site content will format in business and client technical environments and different browsers and digital devices 4.3 Adjust architecture according to client feedback 4.4 Obtain sign-off prototype from required personnel and confirm business requirements are met

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Oral communication	• Uses listening and questioning techniques to convey client requirements, and articulate complex information using specific language applicable to audience
Reading	• Reads and interprets specifications, technical data and other documentation from a variety of sources, and consolidates information to determine requirements
Writing	• Develops and designs information architecture for a complex website using required language according to client and business requirements • Prepares correspondence using applicable language, spelling and terminology to collect and confirm information
Planning and organising	• Accepts responsibility for planning and sequencing complex tasks and workload • Negotiates key aspects with others, including required capabilities, efficiencies and effectiveness
Problem solving	• Applies systematic and analytical decision-making processes for complex situations

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SKILL	DESCRIPTION
Technology	• Uses and investigates new digital technologies and applications • Manages and manipulates data and communicates with others in a secure and stable digital environment

Unit Mapping Information

Supersedes and is equivalent to ICTWEB508 Develop website information architecture.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB522 Develop website information architecture

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop and design information architecture for a complex website with at least ten pages, according to technical requirements.

In the course of the above, the candidate must:

- test access path to all sections of website
- confirm functionality and accessibility of website information architecture on at least two different browsers and at least two different digital devices.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- corporate strategies related to business websites
- the importance and purpose of client and business liaison
- the purpose and function of cascading style sheets (CSS)
- the use of hypertext markup language (HTML), extensible hypertext markup language (XHTML) and hypertext transfer protocol (HTTP), in web design
- technology connectivity implications
- processes for documenting technical specifications
- World Wide Web Consortium (W3C) standards
- website architecture and business process design and linkages between processes
- website accessibility and security access requirements.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a web server
- client and business requirement specifications
- an integrated development environment (IDE), required for creating web pages and server-side code
- web development technology required to develop website information architecture.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB523 Manage transactions using site server tools

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to use site server tools to host, track and monitor transactions on an e-business site.

It applies to individuals who work in a web environment and are responsible for using site server tools to maintain the integrity of an e-business site, applying detailed technical knowledge and highly developed analysis and interpretation skills.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Define and document task requirements	1.1 Identify and confirm task and integration requirements, features and functionality of site with required personnel 1.2 Confirm platform and software related to business systems 1.3 Determine standards applicable to task and site functionality 1.4 Document the organisations current and proposed configuration according to organisational procedures 1.5 Document and validate client task requirements, performance criteria and scope of work with required personnel 1.6 Confirm available resources and budget with the client

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ELEMENT	PERFORMANCE CRITERIA
2. Select and use server tools	2.1 Identify applicable site server tools according to task requirements 2.2 Review and evaluate tools according to task and site functionality requirements 2.3 Load and configure server tools according to vendor guidelines and client requirements 2.4 Test equipment using server tools 2.5 Maintain or update required functionality using server tools 2.6 Complete required tasks using server tools according to vendor guidelines
3. Review server tools and task requirements	3.1 Monitor, analyse and evaluate organisational procedures 3.2 Review site server configuration and tools applicable to client task requirements and adjust as required 3.3 Validate server outcomes using site-analysis software 3.4 Create and use reports and other documentation according to organisational procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Accommodates business requirements by interpreting budgetary constraints and undertakes mathematical calculations with reference to available resources
Oral communication	• Uses listening and questioning techniques to convey client requirements, and articulate complex information using specific language applicable to audience
Reading	• Critically analyses complex documentation from a variety of sources and consolidates information applicable to specific criteria
Writing	• Prepares reports and required documentation expressing ideas and scope of work, and correspondence for specific audiences according to organisational procedures
Teamwork	• Builds strong relationships by collaborating with others and sharing information
Planning and organising	• Accepts responsibility for planning and sequencing complex tasks and workload • Negotiates key aspects with others, including required capabilities,

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SKILL	DESCRIPTION
	efficiencies and effectiveness • Monitors progress of plans and schedules and reviews and changes them to meet new demands and priorities
Problem solving	• Applies systematic and analytical decision-making processes for complex situations
Self-management	• Takes responsibility for following policies, procedures, legislative requirements and industry standards • Modifies or develops organisational policies and procedures to comply with industry standards and organisation goals
Technology	• Uses and investigates new digital technologies and applications • Manages and manipulates data and communicates with others in a secure and stable digital environment

Unit Mapping Information

Supersedes and is equivalent to ICTWEB509 Use site server tools for transaction management.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB523 Manage transactions using site server tools

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- maintain and monitor transactions on an e-business site using at least three different site server tools.

In the course of the above, the candidate must:

- maintain expected business performance and technical standards in an e-business environment
- confirm transactions function on at least two different browsers and at least two different devices
- review e-business site procedures and task requirements.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- integration requirements and different features and functionalities of sites
- legislative and organisational standards and requirements applicable to task requirements
- documentation processes
- vendor guidelines of site server tools
- e-business site procedures and requirements
- devices and equipment required for a business site
- configuration and validation techniques for site server tools
- functions and features of site server tools applicable to:
  - required firewalls and proxy servers
  - hypertext transfer protocol (HTTP) servers
  - search engines

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- cyber security measures required for site
- tools and products required for site construction
- site-building considerations applicable to business.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- server hardware
- industry standard site server tools
- an existing e-business website
- site-analysis software
- browsers and digital devices
- client and business expectations brief
- required standards and legislation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB524 Analyse information and assign meta tags

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to analyse material and assign meta tags to confirm accuracy and consistent retrieval of information by users.

It applies to individuals in a range of Information and Communications Technology (ICT) areas that use various techniques and software to create, update and enhance meta tags according to industry guidelines and client specifications.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify meta tag requirements	1.1 Identify the scope and use of materials, and user requirements 1.2 Determine applicable type and structure of meta tags according to identified client needs, requirements and expectations 1.3 Identify and incorporate client requirements and expectations
2. Analyse material	2.1 Perform analysis on required materials according to organisational procedures 2.2 Confirm determined subject content of material reflects expected client usage requirements

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ELEMENT	PERFORMANCE CRITERIA
	2.3 Identify significant information from minor information 2.4 Confirm concepts derived from material analysis are applicable to business requirements and intended use
3. Create meta tags	3.1 Develop meta tags using applicable software 3.2 Confirm meta tags represent concepts and align with overall purpose and intended use of the material 3.3 Confirm meta tags conform to general conventions and business requirements 3.4 Develop reference structure of descriptors and display relationships where required 3.5 Update meta tags according to identified client needs
4. Test and monitor meta tagging practices and procedures	4.1 Test meta tagging of material and make changes as required 4.2 Review meta tagging practices and procedures and confirm client needs are met 4.3 Review industry developments in meta tagging and improve practices as required 4.4 Check meta tags regularly and confirm internal consistency and compliance with established structure, rules and authorities

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Reads and interprets plans, specifications, program data and other documentation from a variety of sources and consolidates information
Writing	• Develops meta tags using applicable language and software according to client needs and industry developments
Planning and organising	• Accepts responsibility for planning and sequencing complex tasks and workload • Negotiates key aspects with others, including required capabilities, efficiencies and effectiveness • Monitors progress of plans and schedules, and reviews and changes them to meet new demands and priorities
Problem solving	• Applies systematic and analytical decision-making processes for

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SKILL	DESCRIPTION
	complex situations
Self-management	• Takes responsibility for following policies, procedures, industry standards and legislative requirements, and identifies organisational implications of new regulations
Technology	• Uses and investigates new digital technologies and applications • Manages and manipulates data and communicates with others in a secure and stable digital environment

Unit Mapping Information

Supersedes and is equivalent to ICTWEB510 Analyse information and assign meta tags.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB524 Analyse information and assign meta tags

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- analyse information and assign at least five meta tags, according to technical requirements.

In the course of the above, the candidate must:

- update meta tags in line with client needs and industry developments
- use analysis and description tools, standards, precedents and techniques applicable to nature of the material.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- business conventions and rules for applying meta tags
- client business domain
- data modelling
- database management system (DBMS) fundamentals
- decision support systems
- document indexing and search engines
- functions and features of databases
- different types and structures of meta tags
- metadata standards, including Dublin Core and simple hypertext markup language (HTML) ontology extensions
- reference structure of descriptors and their role in assisting clients
- general conventions and business requirements applicable to meta tags
- meta tag testing and monitoring processes.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- business and client information and materials
- metadata software
- project-related documentation
- hardware required to analyse information and create meta tags
- information applicable to industry developments in meta tagging.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB525 Implement quality assurance process for websites

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to develop and conduct planned and systematic actions to ensure that websites conform to applicable standards and fulfil client expectations.

It applies to individuals in the web field of work that use highly developed communication, analysis and technical skills to determine intelligent strategies for ongoing website improvement.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish standards	1.1 Identify applicable regulatory, accessibility, industry and organisational compliance standards for websites 1.2 Develop and quantify measurable performance standards from those standards 1.3 Establish centralised, distributed or combined quality assurance methodology 1.4 Determine specification from which website was developed 1.5 Establish guidelines for controlling, updating and loading new content on to website

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ELEMENT	PERFORMANCE CRITERIA
	1.6 Document established quality assurance procedures and processes according to organisational procedures 1.7 Confirm standards, guidelines and quality assurance methodology with required personnel and distribute documents as required
2. Apply standards and track performance	2.1 Apply all processes as integral part of website development process 2.2 Validate site, updates and new content against performance standards using wide variety of browsers, tools and devices 2.3 Document and disseminate results to required personnel 2.4 Provide feedback to web authors, users and administrators
3. Develop and apply continuous improvement process	3.1 Provide performance standards feedback to developers, maintainers and administrators 3.2 Identify below average and unacceptable performance standards and apply required performance improvement measures 3.3 Provide channels for interaction, feedback and suggestions from site users, administrators, developers and maintainers 3.4 Respond accordingly to interaction, feedback and suggestions 3.5 Develop procedures and identify whether feedback and suggestions are applied and actioned 3.6 Conduct regular benchmark reviews based on improved performance and disseminate revised benchmarks 3.7 Document and control changes to procedures, processes and results

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Analyses data to quantify response times and timelines when determining performance standards
Oral communication	• Articulates requirements and strategies via an open line of communication using language applicable to audience and environment • Selects, implements and seeks to improve protocols governing communications to clients and co-workers in a range of work

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SKILL	DESCRIPTION
	contexts
Reading	• Analyses complex documentation from a variety of sources and consolidates information applicable to specific criteria
Writing	• Prepares documentation detailing established quality assurance procedures and processes for specific audiences using succinct language according to client requirements and organisational procedures
Teamwork	• Implements strategies for a diverse range of colleagues and clients to build rapport and foster strong relationships
Initiative and enterprise	• Investigates new and innovative ideas to continuously improve work practices and processes through consultation
Planning and organising	• Accepts responsibility for planning and sequencing complex tasks and workload • Negotiates key aspects with others, including required capabilities, efficiencies and effectiveness • Monitors progress of plans and schedules and reviews and changes them to meet new demands and priorities
Problem solving	• Applies systematic and analytical decision-making processes for complex situations
Self-management	• Takes responsibility for following policies, procedures and legislative requirements and identifies organisational implications of new legislation and regulations • Modifies and develops organisational policies and procedures to comply with legislative requirements and organisational goals • Seeks to improve policies and procedures according to organisational goals • Elicits feedback and provides feedback to others

Unit Mapping Information

Supersedes and is equivalent to ICTWEB511 Implement quality assurance process for websites.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB525 Implement quality assurance process for websites

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify, establish and implement a quality assurance process for websites with at least three performance benchmarks and at least three quantitative standards.

In the course of the above, the candidate must:

- evaluate existing processes and procedures
- determine applicable quality assurance methodology
- validate a website against performance standards using at least two different browsers and on at least two different devices
- comply with organisational procedures.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- business process design and customer and business liaison
- legislative and organisational requirements and compliance standards applicable to websites, including:
  - copyright and intellectual property
  - provisions of privacy legislation
  - website accessibility and equity legislation
- methods of developing and quantifying performance standards
- different quality assurance methodologies applicable to websites
- documentation techniques
- site validation processes
- different methods and channels for interaction, feedback and suggestions

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- benchmark review processes
- functions and features of website architecture and website security
- workload metrics and technical performance measurement.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- web servers
- a website
- analysis software
- text-editing software
- automatic testing software
- hardware, browsers, tools and devices required to implement quality assurance process for websites
- channels for interaction, feedback and suggestions
- documentation for applicable regulatory, industry compliance and accessibility standards.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB526 Implement and use web services

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to support web services for building distributed applications.

It applies to individuals working as software developers and apply specialised skills in the consumption of web services, applicable communications protocols and extensible markup language (XML) technologies used in web services.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Provide information using XML	1.1 Create XML data structures from various data sources 1.2 Manipulate XML data structures using a common application programming interface (API) 1.3 Scope elements from multiple XML documents using namespaces 1.4 Validate XML data structures using a schema 1.5 Map and transform XML document from one schema to another
2. Promote web service using WDSL	2.1 Identify purpose and the three main elements of the web service description language (WSDL) 2.2 Build WSDL file according to identified purpose

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ELEMENT	PERFORMANCE CRITERIA
	2.3 Provide web access to WSDL file via a uniform resource locator (URL)
3. Identify purpose of UDDI in using web services	3.1 Determine purpose of universal description, discovery and integration (UDDI) 3.2 Identify and analyse differences between public, extra-enterprise and intra-enterprise UDDI registry deployments 3.3 Define relationship between WSDL and UDDI
4. Access web services using SOAP	4.1 Identify purpose of simple object access protocol (SOAP) 4.2 Determine relationship between UDDI and SOAP 4.3 Identify basic structure and processing of SOAP messages 4.4 Retrieve XML documents from a public web service, using SOAP
5. Implement a web service	5.1 Outline a basic web service architecture 5.2 Implement, test and publish a web service 5.3 Incorporate and test a web service into an application 5.4 Confirm web service is functional on different browsers and devices 5.5 Seek feedback from required personnel and amend web service as required

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Reads and interprets specifications, program data and other documentation from a variety of sources and consolidates information
Writing	• Transforms and writes technical data in a logical manner using required language and protocols • Develops specifications and applicable workplace documentation for specific audiences using applicable language to convey explicit information
Planning and organising	• Accepts responsibility for planning and sequencing complex tasks and workload • Negotiates key aspects with others, including required capabilities, efficiencies and effectiveness

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SKILL	DESCRIPTION
Problem solving	• Makes critical decisions quickly and intuitively in complex situations, taking into consideration a range of variables, including outcomes of previous decisions • Applies systematic and analytical decision-making processes, for complex situations
Technology	• Confirms knowledge of computing technologies is kept up to date in order to provide and carry out activities • Uses and investigates new digital technologies and applications • Manages and manipulates data and communicates with others in a secure and stable digital environment

Unit Mapping Information

Supersedes and is equivalent to ICTWEB515 Implement and use web services.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB526 Implement and use web services

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- transform data from at least three relational or other native data sources into an extensible markup language (XML).

In the course of the above, the candidate must:

- provide access to a business functionality via a web service description language (WSDL) file
- locate and retrieve at least three pieces of information about a public web service business function and include it in a website using universal description, discovery and integration (UDDI) and a simple object access protocol (SOAP)
- implement a web service according to business requirements, specifications and industry standards.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- functions and features of web development technologies
- web service testing processes
- purpose and uses of different web services, including XML, WDSL, UDDI and SOAP
- functions and purpose of web service architecture
- functions and features of XML language and data structures and validation techniques
- uses of namespaces
- legislative and organisational requirements applicable to the implementation and use of web services.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- web service business requirement specifications
- legislative requirements applicable to use of web services, including industry standards published by the World Wide Web Consortium (W3C)
- platform-specific documentation and help files describing syntax and use of proprietary technologies
- digital devices simulated development environment including the following elements:
  - a relational database server
  - the integrated development environment (IDE), including related frameworks, APIs and applicable proprietary classes required to implement web services and their enabling technologies
  - a web server
  - web browsers
  - XML editors
  - XML schema
  - XPath testing utilities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB527 Research and apply emerging web technology trends

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to identify, research and apply emerging web technologies.

It applies to individuals who are highly skilled technicians and have high-level knowledge of the principles of analysis and design.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify emerging web technology	1.1 Identify needs of web application 1.2 Research and review new developments in web technology 1.3 Identify new developments in web technology that meet identified needs of web application 1.4 Evaluate and select web technology most applicable to web application needs 1.5 Identify legislative and organisational requirements and standards applicable to implementation of new technology 1.6 Discuss and confirm selection with required personnel

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ELEMENT	PERFORMANCE CRITERIA
2. Implement new web technology	2.1 Create required code to apply web technology 2.2 Apply code to web technology according to organisational procedures 2.3 Test web application in a variety of browsers and digital devices, and rectify problems as required
3. Review and finalise web technology implementation process	3.1 Review test results and discuss findings with required personnel 3.2 Seek feedback from required personnel and amend as required 3.3 Document work performed and findings according to organisational procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Critically analyses complex information from a variety of sources and consolidates information applicable to specific criteria
Writing	• Writes and edits code and technical data in a logical manner using required syntax
Initiative and enterprise	• Investigates new and innovative ideas to improve work practices and processes
Planning and organising	• Accepts responsibility for planning and sequencing complex tasks and workload • Negotiates key aspects with others, including required capabilities, efficiencies and effectiveness
Technology	• Manages and manipulates data and communicates with others in a secure and stable digital environment

Unit Mapping Information

Supersedes and is equivalent to ICTWEB516 Research and apply emerging web technology trends.

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Links

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Assessment Requirements for ICTWEB527 Research and apply emerging web technology trends

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- research, investigate and apply at least two emerging web technology trends to a web application, according to organisational needs.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- principles of the internet and technologies that underpin its existence
- key principles of analysis and design
- programming control structures and object-oriented programming applicable to implementing new web technology
- web programming concepts, including:
  - the hypertext transfer protocol (HTTP)
  - stateless programming
  - session management
  - authentication and web security
  - client-side programming
- latest web technology trends and their application to different clients
- features, functions and requirements of different web applications
- web application testing processes
- sources of information regarding new and emerging trends and technologies
- legislative and organisational requirements and standards applicable to implementation of new technologies.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a development environment
- a server
- a database server
- hardware and software applicable to implementation of new technology
- the internet
- browsers and digital devices.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWHS205 Work safely near power infrastructure at a telecommunications workplace

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to conduct telecommunications operations near substantial safety hazards. It includes applying a risk management approach to a limited range of predictable problems when working at heights near electrical distribution infrastructure, radiation devices, or other services in confined spaces. This unit also includes the preparation of risk control measures within scope of own role that encompass job safety analysis.

It applies to telecommunications workers who perform work functions such as rigging, telecommunications installation and maintenance, and/or any other activity that requires working safely and complying with requirements and/or established procedures near live electrical apparatus.

It does not include any work that is or may be performed by other competent operatives within the defined ‘safe work zone’, which is defined by relevant state/territory regulatory agencies/bodies, local government legislation, industry bi-partite body, guidelines/codes of practice or other related requirements for safe work and access near live electrical and mechanical apparatus.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements and may require a licence/registration in relation to:

- work health and safety
- electricity/telecommunications/gas/water industry safety and compliance
- industrial relations
- anti-discrimination.

Age limits for operating certain equipment may also be covered by commonwealth, state/territory or local government legislation and regulations.

This unit does not cover legislative requirements for confined space entry, elevating work platform (EWP) operations, traffic control, or spotter/safety observation.

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Unit Sector

Telecommunications – Workplace Health and Safety

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to work safely near live electrical apparatus	1.1 Receive and confirm instructions related to the work to be performed 1.2 Identify relevant requirements and established procedures to be followed and personnel to be contacted for the work to be performed 1.3 Receive and confirm work health and safety (WHS) policies and procedures and technical standards relevant to the work and worksite 1.4 Collaborate with other telecommunications workers in meeting the safety requirements for working near live electrical apparatus 1.5. Identify, receive and confirm scope of responsibility and issued work permit/s according to workplace requirements and established procedures 1.6 Identify and confirm that first aid, safety observers and/or other related work safety procedures are in place to be followed in the event of an incident 1.7 Identify processes for reporting customer issues to appropriate personnel 1.8 Confirm site and work schedule according to given instructions and established procedures 1.9 Use safe approach distances and apply safe work zones
2. Conduct risk assessment	2.1 Assess risks from electrical, radiation, gas and other services in or adjacent to the worksite according to established procedures 2.2 Assess safety of the worksite, earthing arrangements, and other services and support structures using appropriate monitoring equipment and according to established procedures 2.3 Complete a job safety analysis (JSA) or similar risk assessment record specific to site and work requirements, and report safety hazards to relevant personnel 2.4 Assess potential emergency situations relevant to the site 2.5 Take measurements to assess electrical potential or charge leakage into adjoining infrastructure according to established procedures

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ELEMENT	PERFORMANCE CRITERIA
	2.6 Perform electrical and mechanical pole tests to ensure it is safe to climb 2.7 Inspect all hand and power tools, ladders, climbing and lifting equipment apparatus before use
3. Apply enterprise risk management plan	3.1 Apply enterprise procedures to manage potential hazards and risks 3.2 Communicate and confirm risk management strategies with co-workers within scope of own role 3.3 Confirm safety procedures to ensure management of emergency situations are in place 3.4 Obtain safety equipment and personal protective equipment (PPE) 3.5 Delineate safe work zones and limits of approach to other services 3.6 Observe required road safety and traffic control measures according to established procedures 3.7 Implement safe strategies for working at heights and in confined spaces, according to regulatory requirements and within scope of own role
4. Complete work safely near live electrical apparatus	4.1 Report schedule and anomalies for completion and checking of work to authorised personnel, according to established procedures 4.2 Use safety equipment and PPE effectively 4.3 Use tested ladders, climbing and lifting equipment to work safely at heights, according to regulatory requirements and safety procedures 4.4 Operate hand and power tools safely at heights 4.5 Complete the work and ensure it complies with enterprise and industry earthing practices 4.6 Provide assistance in clearing worksite to ensure safety of telecommunications workers, the public and the telecommunications network 4.7 Complete work records and notify appropriate personnel that work is completed

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description

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Skill	Description
Reading	• Reads and interprets documentation from a variety of sources and consolidates information to determine safety requirements
Writing	• Accurately records and completes enterprise safety documents and correspondence using clear language and correct spelling, grammar and terminology
Oral Communication	• Uses clear language, concepts, tone and pace appropriate for the audience to communicate safety outcomes
Navigate the world of work	• Understands rights and responsibilities and complies with legal and regulatory requirements • Complies with explicit policies and procedures • Explores and implements implicit expectations of policies and procedures
Interact with others	• Uses a limited range of accepted practices for communicating in a work environment
Get the work done	• Plans and implements routine tasks and workload making limited decisions on sequencing, timing and collaboration; and seeks assistance in setting priorities • Responds to predictable routine problems, implementing standard or logical solutions

Unit Mapping Information

No equivalent unit. Supersedes and is not equivalent to ICTWHS203 Work safely near power infrastructure.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWHS205 Work safely near power infrastructure at a telecommunications workplace

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- conduct a risk assessment or simulated risk assessment for a telecommunications work site near power infrastructure
- identify the safety and licensing requirements for working at heights and working in confined spaces
- apply safety precautions while working at heights or in confined spaces near power infrastructure
- test power pole infrastructure for electrical safety before working on the infrastructure
- perform tests on the mechanical soundness of a pole in accordance with the asset (pole) owner guidelines.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- consequences of short circuits including:
  - arc flash
  - basic power industry protection schemes like reclosers
  - drop out fuses and their limitations for current limiting
- effects of current including:
  - physiological effects and protection for physiological effects
  - basic principle by which electrical current can result in the production of heat, light and electromagnetic field

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  - typical effects of current
- definitions of terminologies including:
  - safe work zone
  - risk assessment
  - safe approach distances zones
  - safe working distances
  - work permit
  - access authorisation permits
  - technical standards
  - isolation procedures
  - compliance requirements
- legislation, regulations, codes, standards, guidelines, enterprise requirements, certification and licensing applicable to above performance evidence and own telecommunications role when working safely up to the defined ‘safe work zone’ near energised electrical apparatus (including electrical powerlines), in particular:
  - electrical safety and technical knowledge relating to operating plant or vehicle near power lines including ‘step and touch potential’ and earth potential rise
  - safe approach distances including safe work zones that may apply for the intended work
  - for work near live electrical infrastructure – including AS/NZS 3000:2018 Electrical installations known as the Australian/New Zealand Wiring Rules
  - main components of work health and safety (WHS) that affect the work function
  - workplace environmental and WHS procedures including:
    - designation of personnel responsible for WHS
    - requirement for employee participation in WHS management
    - standard meanings of WHS symbols found on signs and labels in the workplace
    - raising WHS issues
    - recognising and reporting on hazards
    - responding to accidents, fires and emergencies
    - work operations to control risks
    - common road and pedestrian safety control measures appropriate to the worksite
- separation and segregation between power and telecommunications cables and fittings
- ground clearances, in-span clearances and attachment point clearances
- test procedure for timber, steel, concrete and composite poles
- techniques and precautions for undertaking different work functions and working safely up to the defined ‘safe work zone’ near energised electrical apparatus (including electrical powerlines) applicable to above performance evidence and own telecommunications role (work functions that may be performed include, vegetation control, rigging, dogging and/or any other activity that requires working safely near live electrical apparatus by a telecommunications worker)
- limitations of installing telecommunications infrastructure on power assets, including installations near transformers and power substations

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- environmental control processes:
  - disposal and handling of hazardous and dangerous substances
  - noise pollution
  - waste disposal
- electricity infrastructure assets, related voltages and requirements for working safely near live electrical apparatus as a telecommunications worker
- how step or touch potential manifests itself
- earth potential rise and how it manifests itself
- weather conditions suitable for working near live electrical apparatus as a telecommunications worker
- safe work zone for safe access near live electrical infrastructure for workers and operational plant
- established enterprise procedures relating to working safely near power infrastructure at a telecommunications workplace, including incident management procedures
- low and high aerial voltage systems.

Assessment Conditions

This unit of competency falls into the definition of high risk work and should be delivered and assessed in accordance with the national standard.

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- telecommunications site/s near power infrastructure
- relevant WHS legislation, regulations and codes of practice
- enterprise WHS policies and procedures
- personal protective equipment (PPE).

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards. Refer also to the *Requirements for assessors* of high risk units in the ICT Information and Communications Technology Training Package Companion Volume Implementation Guide.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWOR202 Work effectively in the digital and telecommunications industry

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to work effectively within the digital and telecommunications industry and to work within enterprise arrangements and requirements.

It applies to individuals directly employed within a large enterprise or preparing to work for a small sub-contractor who undertake a range of tasks under supervision.

This unit applies to people who have recently entered the digital and telecommunications industry and are beginning their career as direct employees or contractors.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Workplace Effectiveness

Elements and Performance Criteria

Elements *Elements describe the essential outcomes*	**Performance Criteria** *Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan ongoing skills development	1.1 Obtain information about the various sectors of the digital and telecommunications industry 1.2 Seek advice about future career opportunities from appropriate people 1.3 Identify possible career directions in the enterprise for personal advancement

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Elements	Performance Criteria
	1.4 Self-assess own skills against job role to identify skills gap and plan for further skills development 1.5 Determine appropriate strategies to acquire additional skills 1.6 Identify and apply methods for keeping up-to-date with industry developments
2. Research a digital and telecommunications contractor business	2.1 Identify activities that are undertaken by a contractor business within the digital and telecommunications industry 2.2 Identify licences, permits, regulations or restrictions that apply to operating a contracting business 2.3 Identify resources available to support a contracting business 2.4 Identify costs of suitable vehicles and equipment required by a digital and telecommunications contracting business 2.5 Identify insurance requirements for operating a digital and telecommunications contracting business
3. Confirm employment arrangements	3.1 Access and read employment terms and conditions, and clarify points of concern 3.2 Access, read, negotiate and agree on work goals and objectives, according to enterprise requirements 3.3 Obtain information relevant to technical and regulatory requirements and apply at work
4. Participate in enterprise operations	4.1 Consult co-workers and team members to identify team purpose, roles, responsibilities, goals, plans and objectives 4.2 Develop strategies to support shared goals and seek assistance from others, as required, to prevent conflict 4.3 Comply with industry standards, and work health and safety guidelines
5. Contribute to teamwork and performance	5.1 Give and respond to feedback to assist in meeting team and personal goals 5.2 Communicate unresolved issues to appropriate personnel
6. Follow environmental regulations	6.1 Apply enterprise environmental policies and procedures 6.2 Ask questions and seek clarification relating to environmental work requirements 6.3 Identify environmental incidents that contravene environmental procedures and report to appropriate personnel according to these procedures

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Learning	• Employs a range of approaches and investigative techniques to source the knowledge required to establish, plan, manage and evaluate skill development
Reading	• Recognises and interprets text to determine key information and specific requirements and responsibilities
Writing	• Develops material for a specific audience using clear and detailed language in order to convey explicit information, requirements and recommendations
Oral Communication	• Participates in a verbal exchange of ideas and elicits the view and opinions of others by listening and questioning
Navigate the world of work	• Takes steps to develop skills, obtain qualifications and/or experience relevant to current or desired work role • Attempts to follow directions on the scope of responsibility within the role and begins to recognise when to involve others
Interact with others	• Cooperates with team as part of familiar routine activities, and contributes to specific activities requiring joint responsibility and accountability • Seeks support from team when preventing conflict
Get the work done	• Plans routine tasks with familiar goals and outcomes, taking some limited responsibility for decisions regarding sequencing and timing

Unit Mapping Information

No equivalent unit. Supersedes and is not equivalent to ICTWOR201 Work effectively in telecommunications technology.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWOR202 Work effectively in the digital and telecommunications industry

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- obtain information about relevant digital and telecommunications industry sectors including employment conditions
- develop a list of contracting opportunities within the telecommunications industry
- actively participate in a team.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- range of digital and telecommunications team roles and how these roles impact on the way a team works and what it might achieve
- terms and conditions of employment common to the digital and telecommunications industry
- role of contracting within the digital and telecommunications industry
- legislation, codes and other formal agreements that impact on the work activity
- various sectors of the digital and telecommunications industry
- enterprise policies, plans and procedures
- sources of advice about career planning and skill development
- specific work health and safety (WHS) requirements relating to the activity and site conditions
- environmental policies and procedures applicable to working in the digital and telecommunications industry.

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Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- digital and telecommunications technology team
- examples of resumes and career planning resources
- relevant enterprise documentation such as policies, procedures and practices.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWOR308 Provide customer service to telecommunications customers

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to deliver all aspects of customer service relevant to the telecommunications industry. It includes creating a relationship with customers, identifying their needs, delivering services or products and processing customer feedback.

It applies to technicians who perform a range of tasks in a defined context under supervision or as part of a team.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Workplace effectiveness

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish contact with customers	1.1 Greet customer in a professional, courteous and concise manner according to enterprise requirements 1.2 Maintain personal presentation according to enterprise requirements 1.3 Communicate using appropriate interpersonal skills to facilitate accurate and relevant exchange of information 1.4 Respond appropriately to customer requests and use effective

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ELEMENT	PERFORMANCE CRITERIA
	communication strategies that reflect customer support needs 1.5 Establish rapport with customer by expressing a genuine interest in customer requirements
2. Identify telecommunications installation requirements	2.1 Use active listening and questioning techniques to clarify installation requirements 2.2 Identify details of existing and proposed telecommunications and/or cabling work 2.3 Establish intended uses of equipment and associated cabling requirements 2.4 Discuss benefits and disadvantages of alternative cabling or equipment as required 2.5 Convey information respectfully and clearly
3. Identify installation locations	3.1 Assess potential locations to ensure accuracy of installation 3.3 Propose locations and confirm with customer 3.4 Review existing plans and verify that proposed locations match enterprise preferred locations 3.5 Scope activities to avoid work, health and safety (WHS) hazards
4. Deliver service/s to customers	4.1 Establish availability, security, safety and other constraints on use of existing systems 4.2 Communicate information according to enterprise code of conduct 4.3 Implement enterprise procedures to install equipment and/or cabling according to industry standards and manufacturer specifications
5. Work as a team to provide customer service	5.1 Acknowledge workplace team in providing customer service 5.2 Agree on and establish a set of team goals and procedures in providing customer service 5.3 Contribute to and support other team member goals to achieve quality customer service outcomes 5.4 Review team goals and processes, as part of the team, to ensure continuous improvement of services provided to customers
6. Process customer feedback	6.1 Seek, recognise and acknowledge customer feedback in order to improve personal performance and/or behaviour 6.2 Respond according to enterprise procedures and legislative requirements

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ELEMENT	PERFORMANCE CRITERIA
	6.3 Identify unmet needs and evaluate suitable ways to action feedback 6.4 Assist customers to contact other services according to enterprise policies and procedures
7. Finalise customer interaction	7.1 Complete all required documents promptly and accurately according to enterprise policies and procedures 7.2 File completed documentation according to enterprise policies and procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Skill	Description
Reading	• Understands requirements in enterprise policy and procedure documents • Interprets product and service information in a range of formats to provide customer advice
Writing	• Records customer information according to enterprise requirements
Oral Communication	• Provides information or advice using structure and language to suit the audience • Asks questions and listens to gain information or confirm understanding
Numeracy	• Performs mathematical calculations to check and confirm location of installation
Navigate the world of work	• Follows enterprise procedures and practices relevant to own role
Interact with others	• Uses accepted communication practices to establish connections, build rapport and develop professional working relationships • Adjusts personal communication style in response to the opinions, values and particular needs of others
Get the work done	• Addresses routine problems in familiar work contexts • Recognises opportunities to enhance work practices and outcomes

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Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWOR308 Provide customer service to telecommunications customers

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- provide routine telecommunications customer services in a professional manner
- document and record concerns and solutions according to enterprise guidelines and escalation procedures
- identify customer needs using appropriate interpersonal skills
- provide prompt service to address customer needs according to enterprise requirements
- identify opportunities to increase the quality of service and products
- respond to and record all customer feedback according to relevant standards, and enterprise policies and procedures.

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- telecommunications customer equipment and their general features and capabilities
- enterprise systems and telecommunications work environment
- key provisions of relevant legislation from all forms of government that apply to providing customer service
- enterprise policies and procedures relating to the customer service process
- range of typical issues and challenges that can arise when providing customer service in the telecommunications industry.

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Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- workplace documents, enterprise policies and procedures for customer service
- examples of customer feedback
- case studies and, where possible, real situations
- interaction with others.

Assessors of this unit must satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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BSBCRT301 Develop and extend critical and creative thinking skills

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes skills and knowledge required to develop the habit of thinking in a more creative way through looking at things differently, musing, testing, experimenting and challenging existing thought patterns.

It applies to individuals who need to develop and extend their critical and creative thinking skills to different issues and situations and have a range of problem solving, evaluation and analysis skills.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Creativity and Innovation – Creative Thinking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Develop a questioning mindset	1.1 Develop the habit of asking questions from different perspectives 1.2 Take responsibility for exploring a variety of information sources to provide relevant answers to own questions 1.3 Sort through information and ideas to identify the central questions, issues and challenges

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Challenge preconceptions and assumptions to determine actual constraints in defining a problem for resolution
2 Generate ideas and responses	2.1 Explore and use a range of creative thinking techniques to generate ideas and responses 2.2 Muse on, play around with and have fun with ideas in relation to a perceived objective 2.3 Identify and challenge blockers to creative thinking 2.4 Consider and explore realities beyond the current situation 2.5 Evaluate, and where appropriate, challenge existing boundaries to determine perceived or actual constraints 2.6 Show willingness to take risks with ideas and thought processes 2.7 Look around in familiar and unfamiliar places for new inspiration and habitually record observations, experiences, ideas and reflective thoughts to broaden personal knowledge base 2.8 Acknowledge and accept the opportunity for revelation when least expected 2.9 Identify connections and associations from things that seem unconnected
3 Challenge, test and re invent ideas	3.1 Identify, interrogate and challenge the assumptions behind ideas 3.2 Experiment with variations, and explore and challenge a range of different solutions and ideas 3.3 Consciously change perspectives, and evaluate ideas and situations in new ways 3.4 Where appropriate, involve others in ideas and how they might change or be improved
4 Enhance creative thinking skills	4.1 Consciously challenge and question own thought patterns and ways of responding to work and life situations 4.2 Identify and take opportunities to self-assess and to learn about new ideas and different ways of thinking 4.3 Take opportunities to practise and experiment with creative thinking techniques across work and life situations 4.4 Pro-actively talk to others about ways that new ideas and patterns of thinking can be encouraged and developed

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Learning	1.2, 2.7, 4.2	• Uses questioning as a strategy to expand knowledge • Reflects on existing thinking and current practices to generate new ideas
Reading	1.2, 1.3	• Comprehends textual information and integrates ideas and concepts from various sources
Writing	2.7	• Takes notes on observations, experiences and thoughts
Oral Communication	3.4, 4.4	• Participates in a verbal exchange of ideas and elicits the view and opinions of others by listening and questioning
Interact with others	3.4, 4.4	• Collaborates with others to test, strengthen and explore new ideas and different ways of thinking
Get the work done	1.2, 1.3, 1.4, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 3.2, 4.2, 4.3	• Uses analytical techniques to identify issues and evaluate options • Contributes to the design of new approaches within the immediate work environment • Understands and applies some basic principles of analytical and lateral thinking to identify and select ideas

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
BSBCRT301 Develop and extend critical and creative thinking skills	BSBCRT301A Develop and extend critical and creative thinking skills	Updated to meet Standards for Training Packages	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBCRT301 Develop and extend critical and creative thinking skills

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- ask relevant questions to challenge and enhance creative thinking
- use various information sources to provide answers to own questions
- use a range of creative thinking techniques to generate ideas or responses to questions or issues
- record ideas in response to a predetermined issue or situation.

Note: if a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain why it is important to consider different perspectives when asking questions
- list and describe different creative thinking techniques
- describe common blockers to creative thinking,
- explain boundaries that need to be considered when generating ideas and responses
- describe ways of extending and developing individual creative thinking skills.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the creativity and innovation – critical thinking field of work and include access to specific challenges and situations to which creative thinking may be applied.

Assessors must satisfy NVR/AQTF assessor requirements.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBCRT404 Apply advanced critical thinking to work processes

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 3.0.

Application

This unit describes the skills and knowledge required to use advanced-level critical thinking skills in a professional context. This includes using methods of analysis, synthesis and evaluation.

This unit applies to individuals who evaluate processes, products and services that may be proposed or already existing. This unit applies to individuals who are typically responsible for developing work processes, products and services that may be proposed or already existing.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Unit Sector

Creativity and Innovation – Critical Thinking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Understand critical thinking in a workplace context	1.1 Identify key characteristics of concepts in a critical thinking protocol or process 1.2 Explore situations in which critical thinking concepts may be applied in the workplace 1.3 Reflect on benefits of adopting a critical thinking mindset and

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ELEMENT	PERFORMANCE CRITERIA
	risks associated with failing to do so
2. Apply a systematic approach to decision making	2.1 Analyse and understand key elements of workplace processes, products or services 2.2 Identify limitations in existing or proposed workplace processes, products or services by applying critical thinking protocols or processes 2.3 Source information from a variety of different and verified sources 2.4 Compare and contrast alternative critical thinking concepts in a workplace decision making process 2.5 Apply a decision making framework to reach a defensible conclusion in a workplace context in accordance with organisational policies and procedure 2.6 Articulate and justify decision making process
3. Develop critical thinking mindset	3.1 Conduct review of effectiveness of decision making, including critical self-reflection 3.2 Seek meaningful feedback from organisational management 3.3 Identify areas for self-development 3.4 Develop plan for future process evaluations

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Learning	• Reflects on own performance and seeks opportunities to improve own skills and knowledge
Reading	• Interprets, evaluates and extracts relevant information from a range of texts for work requirements
Writing	• Documents key research findings and ideas • Develops clear workplace documents appropriate to audience and context
Oral Communication	• Articulates ideas and requirements clearly and persuasively using techniques appropriate to audience and environment • Participates in a verbal exchange of ideas and elicits the view and

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	opinions of others by listening and questioning • Uses a range of persuasive responses and makes comparisons which show an understanding of topics and concepts
Numeracy	• Interprets and critically analyses numerical data to determine work process requirements
Navigate the world of work	• Recognises and considers the implications of legal and regulatory responsibilities on own work • Adheres to implicit and explicit organisational procedures and policies, seeking advice from others if necessary
Interact with others	• Demonstrates sophisticated control over oral, visual and/or written formats, drawing on a range of communication practices to achieve goals • Actively identifies the requirements of important communication exchanges, selecting appropriate channel, format, tone and content to suit purpose and audience • Reflects on personal values, behaviours and assumptions and considers how these might be perceived by others • Looks for ways of establishing connections and building genuine understanding with a diverse range of people
Get the work done	• Takes responsibility for systematically planning, sequencing and prioritising tasks according to agreed timelines • Uses systematic processes to gather and analyse information required to make decisions • Recognises opportunities to develop and apply new ideas and select ideas for implementation • Considers the key themes and ideas to be explored and identifies ways to response to and use diverse perspectives • Uses features and functions of digital tools and technologies to store and present information • Contributes to creating a climate where people feel comfortable to suggest, explore, adapt and adopt new ideas as a regular part of work life • Uses problem-solving skills to evaluate and challenge ideas and move towards solutions

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBCRT404 Apply	Not applicable	New unit	No equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
advanced critical thinking to work processes Release 1			

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBCRT404 Apply advanced critical thinking to work processes

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 3.0.

Performance Evidence

Evidence of the ability to:

- explain critical thinking concepts and approaches, the value of applying such approaches, and how they may apply to a workplace context
- use a range of critical thinking techniques to identify and address limitations in workplace processes, products or services
- ask questions of self and others to broaden own knowledge and understanding
- use various information sources to provide answers to own questions
- develop a proposal to articulate to a broad range of workplace stakeholders a solution to an identified issue
- incorporate feedback and self-reflection to critically assess performance

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

The candidate must be able to demonstrate the following knowledge to effectively complete the tasks outlined in the elements and performance criteria of this unit, and to manage tasks and reasonably foreseeable contingencies in the context of the work role:

- key features and characteristics of critical thinking concepts and approaches
- key features and limitations of workplace procedures
- key legislative requirements relating to workplace procedures
- key sources of reliable information relevant to workplace procedures.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the creativity and innovation – critical thinking field of work and include access to:

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- office equipment, technology, software and consumables required to implement internal and maintain internal control procedures
- corporate governance documentation required for role
- organisational operational policies and procedures required for role.

Assessors of this unit must satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBCRT601 Research and apply concepts and theories of creativity

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to undertake in-depth and broad research into different concepts and theories of creativity, and to apply those to a particular field of endeavour.

It applies to individuals who use sophisticated research and critical analysis skills in the exploration of creativity and its application to work and life practice. This research may be related to traditionally creative fields of practice, such as the arts, but may equally relate to broader fields of activity.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Creativity and Innovation – Creative Thinking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Research concepts and theories of creativity	1.1 Use a range of research techniques to source information about creativity 1.2 Identify and explore potential new, emerging and alternative sources of ideas and thinking about creativity 1.3 Expand own knowledge and understanding of creativity

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ELEMENT	PERFORMANCE CRITERIA
	through review and critical analysis of information 1.4 Analyse, compare and contrast a range of theoretical perspectives and thinking on creativity 1.5 Identify and explore the transmigration of creative thought to innovative output
2 Apply theories of creativity to practice	2.1 Evaluate the relevance and application of different theories and practices of creativity based on analysis of own work and life experience 2.2 Analyse the ways in which different aspects of history, theory and other influences are applied, adapted or challenged in practice 2.3 Assess the ways in which theories, thinking and practices about creativity may be applied that provide benefits to individuals, businesses and the community
3 Develop, articulate and debate own perspectives theories and practices of creativity	3.1 Take a critical approach to different theories and reflect on own ideas and responses 3.2 Develop own substantiated positions in response to research and analysis 3.3 Articulate own positions in a manner which demonstrates clarity of thought and conceptual understanding of different theories and thinking 3.4 Debate own positions on creativity showing belief in own ideas and a willingness to remain open to new perspectives

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.5, 2.1- 2.3, 3.2, 3.3	• Analyses and evaluates a range of complex historical and theoretical information and considers how to adopt and challenge ideas and influences in own creative processes
Writing	1.1-1.5, 2.1- 2.3, 3.1- 3.3	• Prepares concise notes to help synthesise information sourced during research • Documents findings and substantiates own opinions

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		using relevant language, tone and structure
Oral communication	3.3, 3.4	• Expresses thoughtful and challenging opinions using engaging language, appropriate tone and syntax • Elicits views and information from others using active listening and provocative questioning techniques
Interact with others	3.3, 3.4	• Uses communication to achieve its purpose, demonstrating a sophisticated understanding of how to get ideas across to others • Shares knowledge and information freely as an integral part of work relationships whilst keeping an open mind to other points of view
Get the work done	1.2, 1.4, 1.5, 2.1-2.3, 3.1	• Systematically gathers and analyses relevant information to inform the development of concepts and ideas • Develops new and innovative ideas through exploration, analysis and critical thinking • Facilitates a climate in which creativity and innovation are accepted as an integral part of the way things are done

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBCRT601 Research and apply concepts and theories of creativity	BSBCRT601A Research and apply concepts and theories of creativity	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBCRT601 Research and apply concepts and theories of creativity

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- conduct at least one research project into past, current and emerging theories of creativity
- develop and discuss substantiated positions on creativity and its application in response to own analysis and research.

Note: if a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain different theories and concepts of creativity, including different historical perspectives and current and emerging thinking
- explain how different theories and thinking on creativity can be applied in different social and work contexts.
- outline potential and actual benefits of creativity for individuals, businesses and communities.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the creativity and innovation – critical thinking field of work and include access to current and emerging sources of information and thinking on creativity.

Assessors must satisfy NVR/AQTF assessor requirements.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBITU211 Produce digital text documents

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 3.0.

Application

This unit describes the skills and knowledge required to digitally produce word documents in a workplace context.

It applies to individuals who perform a range of routine tasks in the workplace, using a limited range of practical skills and fundamental knowledge of word processing software/applications in a defined context, under direct supervision or with limited individual responsibility.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Information and Communications Technology – IT Use

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to produce documents	1.1 Adjust workspace, furniture and equipment to suit user ergonomic environments 1.2 Ensure workspace meets organisational work health and safety requirements for digital device operation, taking into account the type of device to be used 1.3 Identify document purpose, audience and presentation requirements, and clarify with relevant personnel as required 1.4 Identify organisational and task requirements for document

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ELEMENT	PERFORMANCE CRITERIA
	layout and design 1.5 Select most appropriate word processing application to produce document, in accordance with available resources and organisational policies
2. Produce documents digitally	2.1 Format document using appropriate application functions to adjust layout to meet information requirements, in accordance with organisational style and presentation requirements 2.2 Use application features to identify and manipulate display options and controls 2.3 Use relevant help functions to overcome simple issues relating to document presentation and production
3. Finalise and present documents	3.1 Review and edit final document, and prepare for delivery in accordance with organisational and task requirements 3.2 Deliver document to relevant audience within designated timelines and in accordance with organisational requirements 3.3 Name and store document appropriately in accordance with organisational requirements and exit application without information loss

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	• Recognises textual information within organisational and task requirements to determine work requirements
Writing	• Records numerical and textual information in accordance with requirements of task
Oral Communication	• Participates in a variety of spoken exchanges with relevant personnel in an effort to clarify document purpose, audience and presentation requirements
Navigate the world of work	• Recognises and follows explicit and implicit protocols and meets expectations associated with own role
Interact with others	• Seeks guidance from more experienced work colleagues
Get the work done	• Understands functions and features of specific digital applications

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	and uses these to perform work tasks

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBITU211 Produce digital text documents	BSBITU201 Produce simple word processed documents	Updates to title, elements, performance criteria and assessment requirements	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBITU211 Produce digital text documents

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 3.0.

Performance Evidence

Evidence of the ability to:

- follow correct ergonomic requirements and organisational policies and procedures
- produce digital documents that align to document purpose and appropriate to target audience
- adhere to organisational style manual when formatting documents
- use relevant help functions to rectify simple document issues
- produce document in appropriate format for review
- adhere to designated timelines when preparing documents.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

The candidate must be able to demonstrate the following knowledge to effectively complete the tasks outlined in the elements and performance criteria of this unit, and to manage tasks and reasonably foreseeable contingencies in the context of the work role.

- Key elements of basic formatting styles and their effect on formatting, readability and appearance of documents
- Key functions of word processing applications
- Key features of organisational requirements for ergonomics
- Key features of organisational style and presentation guide.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the information and communications technology – IT use field of work and include access to:

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- device user information
- relevant organisational policies and procedures
- relevant workplace documentation and resources including a style guide and user manuals.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBPMG513 Manage project quality

Modification History

Release	Comments
Release 2	This version first released with BSB Business Services Training Package Version 1.2. Version created to correct missing element
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to manage quality within projects. It involves determining quality requirements, implementing quality control and assurance processes, and using review and evaluation to make quality improvements in current and future projects.

It applies to individuals responsible for managing and leading a project in an organisation, business, or as a consultant.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Management and Leadership – Project Management

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine quality requirements	1.1 Determine quality objectives and standards with input from stakeholders

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ELEMENT	PERFORMANCE CRITERIA
	1.2 Document, in a quality management plan, quality metrics for the project and product output 1.3 Select established quality management methods, techniques and tools to resolve quality issues 1.4 Distribute, discuss and support quality requirements with project team and stakeholders 1.5 Include agreed quality requirements in the project management plan, and implement as basis for performance measurement
2. Implement quality processes	2.1 Undertake quality assurance audit of project processes for compliance with agreed plans 2.2 Assess quality control of project and product output according to agreed quality specifications 2.3 Identify causes of variance to quality metrics and undertake remedial action 2.4 Maintain a quality management system to enable accurate and timely recording of quality audit data
3. Implement project quality improvements	3.1 Review processes and implement agreed changes continually throughout the project life cycle to ensure continuous quality improvement 3.2 Review project outcomes against performance requirements to determine the effectiveness of quality-management processes and procedures 3.3 Identify and document lessons learned and recommended improvements

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 2.1, 2.2, 3.1-3.3	• Interprets, analyses and assesses textual information obtained from a range of sources and determines how content may be applied to requirements
Writing	1.2, 1.5, 2.1, 2.4, 3.3	• Develops and documents quality requirements for project plan

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		• Records results of quality audits according to organisational requirements
Oral Communication	1.1, 1.4	• Participates in a verbal exchanges using clear language and appropriate non-verbal features to provide and seek relevant information • Uses active listening and questioning techniques to elicit views and opinions of others
Numeracy	1.1, 1.2, 2.2, 2.3	• Interprets information to determine measurable objectives • Interprets numerical information to measure outcomes against objectives
Navigate the world of work	1.1	• Takes responsibility for identifying and following policies, procedures and standards
Interact with others	1.1, 1.4	• Selects and uses appropriate communication practices in a range of work contexts • Collaborates with others to foster shared understanding of quality requirements
Get the work done	1.3, 1.5, 2.1, 2.2-2.4, 3.1-3.3	• Sequences and schedules complex activities, monitors actions against goals, adjusting plans and resources where necessary • Uses analytical skills to review and evaluate process and decide on future improvements • Uses digital applications to access, organise, integrate and share relevant information in effective ways

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBPMG513 Manage project quality Release 2	BSBPMG513 Manage project quality Release 1	Updated to correct missing element	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBPMG513 Manage project quality

Modification History

Release	Comments
Release 2	This version first released with BSB Business Services Training Package Version 1.2. Version created to correct missing elements
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- work with others to decide a project's quality requirements
- document a quality-management plan
- implement quality control and assurance processes for a defined project using a range of tools and methodologies
- review outcomes and recommend process improvements.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain quality management theory
- explain relevant standards that apply in the organisation
- describe quality assurance and control techniques, key tools and methodologies
- describe roles and responsibilities of quality management personnel
- explain methods for managing continuous improvement.

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Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the management and leadership – project management field of work and include access to:

- project documentation including quality criteria, evidence of quality monitoring and improvement practices
- case studies or, where possible, real situations
- Interaction with others.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBPMG518 Manage project procurement

Modification History

Release	Comments
Release 2	This version first released with BSB Business Services Training Package Version 1.2. Version created to correct missing elements
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to undertake procurement in projects.

It applies to individuals responsible for managing and leading a project in an organisation, business, or as a consultant.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Management and Leadership – Project Management

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine procurement requirements	1.1 Identify procurement requirements with input from stakeholders as basis for procurement planning 1.2 Establish and maintain, within delegated authority, agreed procurement management plan
2. Establish agreed	2.1 Obtain information from suppliers capable of fulfilling

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ELEMENT	PERFORMANCE CRITERIA
procurement processes	procurement requirements 2.2 Determine or adopt established selection processes and selection criteria, and communicate to vendors to ensure transparency 2.3 Obtain relevant approvals for procurement processes to be used
3. Conduct procurement activities	3.1. Identify and act according to ***probity and project governance constraints*** 3.2. Communicate agreed proposals and/or specifications to prospective vendors to ensure clarity of understanding of project objectives 3.3. Solicit vendor responses according to proposal requirements 3.4. Evaluate responses and select preferred vendors according to current legal requirements and agreed selection criteria 3.5. Negotiate with preferred contractor or supplier, to agree on terms and conditions of supply
4. Implement and monitor procurement	4.1. Implement established procurement management plan and make ***modifications*** in line with agreed delegations 4.2. Review progress and manage agreed variations to ensure timely completion of tasks and resolution of conflict within the legal framework of the supply agreement 4.3. Identify and report procurement management issues and implement agreed remedial actions to ensure project objectives are met
5. Manage procurement finalisation procedures	5.1. Conduct finalisation activities to ensure vendor deliverables meet contracted requirements 5.2. Review project outcomes using available procurement records and information to determine effectiveness of procurement processes and procedures 5.3. Document lessons learned and recommended improvements for application to future projects

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

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Skill	Performance Criteria	Description
Reading	1.1, 2.1, 3.1, 3.4, 4.1, 5.2	• Interprets, evaluates and critiques ideas and information from a range of complex texts
Writing	1.2, 2.2, 2.3, 3.2, 3.4, 4.1, 4.2, 4.3, 5.2, 5.3	• Develops plans using vocabulary, structure and conventions appropriate to text • Creates documents for internal and external use, using vocabulary and structure suitable for audience and context • Drafts requests for approvals using organisational formats
Oral Communication	1.1, 2.1, 2.2, 2.3, 3.2, 3.5, 4.2	• Participates in verbal exchanges using clear language to seek and provide information, or request approvals • Uses active listening and questioning techniques to confirm understanding
Numeracy	1.1, 4.2	• Recognises cost parameters and interprets numerical information accordingly • Calculates changes to timelines resulting from changes to plan
Navigate the world of work	1.2, 3.1, 3.4, 4.1	• Understands responsibilities and boundaries of own role
Interact with others	1.1, 2.1, 2.2, 2.3, 3.2, 3.3, 3.5, 4.2	• Selects and uses appropriate conventions and protocols when communicating with internal and external stakeholders to seek or share information • Uses interpersonal skills to negotiate acceptable outcomes
Get the work done	1.1,1.2, 2.1, 3.1, 3.3, 3.4, 4.1, 4.2, 4.3, 5.1, 5.2	• Plans and organises complex activities, monitors implementation and manages relevant communication • Resolves problems and makes decisions based on analysis of options against set criteria and targets

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
BSBPMG518 Manage project	BSBPMG518 Manage project	Updated to correct missing	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
procurement Release 2	procurement Release 1	elements	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBPMG518 Manage project procurement

Modification History

Release	Comments
Release 2	This version first released with BSB Business Services Training Package Version 1.2. Version created to correct missing elements
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- work with others to determine procurement requirements and produce a procurement management plan for a project
- carry out procurement and contracting activities according to agreed processes
- monitor activities across a project's life cycle and resolve issues that could affect achievement of project objectives
- create and maintain procurement records and documentation according to requirements of project and organisation
- document a review of procurement management processes and procedures.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe the general features of a procurement management plan
- summarise procurement procedures and required documentation
- identify criteria that could be used to select vendors or suppliers
- explain the general conditions and legal obligations of contracts as they relate to project procurement
- explain probity and project governance constraints that relate to project procurement in a project and industry context.

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Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the management and leadership – project management field of work and include access to:

- workplace documentation relevant to procurement and contracts
- case studies or, where possible, real situations.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBPMG520 Manage project governance

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to establish and implement project governance. It involves identifying, applying, monitoring and reviewing project governance.

It applies to individuals responsible for managing and leading a project in an organisation, business, or as a consultant.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Management and Leadership – Project Management

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify project management structure	1.1 Determine organisational governance policies, procedures and expectations of project stakeholders 1.2 Negotiate clear and discrete project governance roles and responsibilities with relevant authorities 1.3 Establish delegated authorities for project decision-making 1.4 Identify and record differences between the organisation's functional authorities and project authorities 1.5 Adopt, document and communicate unambiguous governance

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ELEMENT	PERFORMANCE CRITERIA
	plan to relevant stakeholders
2. Apply project governance policies and procedures	2.1 Distribute and present information on governance planning to project team and other relevant stakeholders and ensure common understanding 2.2 Include delegated authorities within role and project position descriptions 2.3 Moderate conflicts regarding roles, responsibilities and authorities to support achievement of project objectives 2.4 Regularly report to the organisation and project authorities on performance and issues arising from governance arrangements
3. Monitor and review project governance	3.1 Analyse and review project governance impact on achieving project objectives 3.2 Document lessons learned and recommendations to assist future projects

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.4, 2.3, 3.1	• Evaluates and critiques ideas and information from a range of sources and determines how content may be applied according to organisational requirements
Writing	1.4, 1.5, 2.2, 2.4, 3.2	• Records data according to organisational requirements • Develops plans, reports and recommendations using vocabulary, structure and conventions appropriate to text
Oral Communication	1.2, 1.5, 2.1, 2.3, 2.4	• Participates in a range of verbal exchanges using clear and detailed language to provide relevant information • Uses active listening and questioning to confirm understanding
Navigate the world of work	1.1, 2.4	• Recognises and responds to explicit and implicit organisational procedures and protocols
Interact with others	1.1, 1.2, 1.5, 2.1, 2.3, 2.4	• Selects and uses appropriate conventions and protocols when communicating with internal and external

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		stakeholders to seek or share information • Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective group interaction and agreement • Manages conflict in workplace through recognising contributing factors and implementing resolution strategies
Get the work done	1.1, 1.3, 1.4, 2.3, 3.1, 3.2	• Organises time and effort around priorities and results, focusing beyond immediate tasks to consider work performance of group • Takes responsibility for high-impact decisions in complex situations • Recognises and addresses complex problems involving multiple variables • Uses experience to reflect on how variables impact decision outcomes, and to gain insights into effective decision-making in different contexts

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBPMG520 Manage project governance	BSBPMG520A Manage project governance	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBPMG520 Manage project governance

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- devise and implement a governance plan, with an appropriate project management structure for a project of sufficient complexity to demonstrate the full range of performance requirements
- demonstrate effective team leadership within context of project governance
- monitor and evaluate a project governance structure.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain escalation and issues management models
- describe frameworks for authority delegations
- identify and analyse organisation or industry governance models in context of the project
- describe project governance plans
- explain methods to moderate and solve conflicts in context of project management.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the Management and Leadership – Project Management field of work and include access to:

- examples of project governance documentation
- records of governance implementation in stakeholder and team activities.

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Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBSMB405 Monitor and manage small business operations

Modification History

Release	Comments
Release 3	This version released with BSB Business Services Training Package Version 2.0. Version created to clarify intent of unit
Release 2	This version first released with BSB Business Services Training Package Version 1.1. Version created to correct mapping table information
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to implement a business plan and modify operations as required.

It applies to individuals who operate a small business which stands alone, or is part of a department within a larger organisation. Individuals in this role use problem-solving skills and take responsibility for developing approaches to manage business operations.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Management and Leadership – Small and Micro Business

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the	*Performance criteria describe the performance needed to*

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ELEMENT	PERFORMANCE CRITERIA
essential outcomes.	*demonstrate achievement of the element.*
1. Develop operational strategies and procedures	1.1 Develop an action plan to provide a clear and coherent direction, in accordance with business goals and objectives 1.2 Identify work health and safety (WHS) and environmental issues, and implement strategies to minimise risk factors 1.3 Develop a quality system for the business in line with industry standards, compliance requirements and cultural criteria 1.4 Develop performance measures and operational targets to conform with the business plan 1.5 Develop strategies for innovation, including utilisation of existing, new or emerging technologies, where practicable, to optimise business performance
2. Implement operational strategies and procedures	2.1 Implement systems and key performance indicators or targets to monitor business performance and customer satisfaction 2.2 Implement systems to control stock, expenditure or cost, wastage or shrinkage and risks to health and safety in accordance with the business plan 2.3 Maintain staffing requirements, where applicable, within budget, to maximise productivity 2.4 Carry out provision of goods or services in accordance with established legal, ethical cultural and technical standards 2.5 Provide goods or services in accordance with time, cost and quality specifications, and customer requirements 2.6 Apply quality procedures to address product or service and customer requirements
3. Monitor business performance	3.1 Regularly monitor and review achievement of operational targets to ensure optimum business performance, in accordance with business plan goals and objectives 3.2 Review systems and structures, with a view to more effectively supporting business performance 3.3 Investigate and analyse operating problems to establish causes and implement changes as required, as part of the business quality system 3.4 Amend operational policies and procedures to incorporate corrective action
4. Review business operations	4.1 Review and adjust business plan, as required, to maintain business viability, in accordance with business goals and

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ELEMENT	PERFORMANCE CRITERIA
	objectives 4.2 Clearly record proposed changes to aid future planning and evaluation 4.3 Undertake ongoing research into new business opportunities and adjust business goals and objectives as new business opportunities arise

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.3, 1.5, 2.1, 2.2, 2.4, 2.5, 3.1, 4.1	• Evaluates complex text to determine legislative, regulatory and workplace documentation
Writing	1.1, 1.3-1.5, 3.2, 3.4, 4.1, 4.2	• Prepares written reports and workplace documentation that communicate complex information clearly and effectively
Oral Communication	3.2	• Articulates clearly using specific and relevant language suitable to audience to convey requirements, and employs listening and questioning techniques to confirm understanding
Numeracy	2.2, 2.3, 2.5	• Interprets numerical information to manage performance information and regulate cash flow
Navigate the world of work	1.1-1.3, 2.2, 2.4, 4.1	• Monitors adherence to organisational policies and procedures and considers own role for its contribution to broader goals of the work environment • Appreciates implications of legal and regulatory responsibilities related to own work with specific reference to safety
Get the work done	1.1, 1.3-1.5, 2.1-2.3, 2.5, 2.6, 3.1-3.3, 4.1, 4.3	• Reflects on how digital systems and tools are used or could be used to achieve work goals, and begins to recognise strategic and operational applications • Identifies concepts, principles and features of approaches in use in other contexts and considers how these may suit own situation • Develops plans to manage relatively complex, non-routine tasks with an awareness of how they may

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		contribute to longer-term operational and strategic goals • Uses each experience to reflect on how variables impact decision outcomes, and to gain insights into what constitutes 'good' judgement and an effective decision in different contexts • Recognises and addresses some unfamiliar problems of increasing complexity within own scope

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBSMB405 Monitor and manage small business operations Release 3	BSBSMB405 Monitor and manage small business operations Release 2	Updated to clarify intent	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBSMB405 Monitor and manage small business operations

Modification History

Release	Comments
Release 3	This version released with BSB Business Services Training Package Version 2.0. Version created to clarify intent of unit
Release 2	This version first released with BSB Business Services Training Package Version 1.1. Version created to correct mapping table information
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- develop strategies and procedures to successfully manage business operations, including:
  - developing an action plan
  - identifying risk management procedures
  - developing a quality system
  - implementing performance measures
  - utilising technologies to optimise business performance
- implement and monitor strategies and procedures developed, including:
  - analysing and correcting business problems
  - reviewing and adjusting the business plan
- record and research business improvements
- make appropriate adjustments to business operations as required.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

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Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- summarise relevant industry codes of practice
- explain methods for implementing operation and revenue control systems
- summarise methods for monitoring performance and implementing improvements
- outline work health and safety (WHS) responsibilities and procedures for managing hazards
- identify relevant principles of risk management, including risk assessment
- clarify quality system principles and methods
- summarise relevant performance measures
- discuss role of innovation
- outline systems to manage staff, stock, expenditure, services and customer service
- identify technical or specialist skills relevant to business operations.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the Management and Leadership – Small and Micro Business field of work and include access to:

- business equipment and resources
- relevant legislation, regulations, standards and codes
- relevant workplace documentation and resources
- case studies or possible, real situations
- interaction with others.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBSUS401 Implement and monitor environmentally sustainable work practices

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 2.0. Version created to better align unit to AQF level.

Application

This unit describes the skills and knowledge required to effectively analyse the workplace in relation to environmentally sustainable work practices and to implement improvements and monitor their effectiveness.

It applies to individuals with responsibility for a specific area of work or who lead a work group or team and addresses the knowledge, processes and techniques necessary to implement and monitor environmentally sustainable work practices, including the development of processes and tools.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Industry Capability – Sustainability

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Investigate current practices in relation to resource usage	1.1 Identify environmental regulations applying to the enterprise 1.2 Analyse procedures for assessing compliance with

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ELEMENT	PERFORMANCE CRITERIA
	environmental/sustainability regulations 1.3 Collect information on environmental and resource efficiency systems and procedures, and provide to the work group where appropriate 1.4 Collect, analyse and organise information from a range of sources to provide information/advice and tools/resources for improvement opportunities 1.5 Measure and document current resource usage of members of the work group 1.6 Analyse and document current purchasing strategies 1.7 Analyse current work processes to access information and data to assist in identifying areas for improvement
2. Set targets for improvements	2.1 Seek input from stakeholders, key personnel and specialists 2.2 Access external sources of information and data as required 2.3 Evaluate alternative solutions to workplace environmental issues 2.4 Set efficiency targets
3. Implement performance improvement strategies	3.1 Source and use appropriate techniques and tools to assist in achieving efficiency targets 3.2 Apply continuous improvement strategies to own work area of responsibility, including ideas and possible solutions to communicate to the work group and management 3.3 Implement and integrate environmental and resource efficiency improvement plans for own work group with other operational activities 3.4 Supervise and support team members to identify possible areas for improved practices and resource efficiency in work area 3.5 Seek suggestions and ideas about environmental and resource efficiency management from stakeholders and act upon where appropriate 3.6 Implement costing strategies to fully utilise environmental assets
4. Monitor performance	4.1 Use and/or develop evaluation and monitoring, tools and technology 4.2 Document and communicate outcomes to report on efficiency targets to key personnel and stakeholders 4.3 Evaluate strategies and improvement plans 4.4 Set new efficiency targets, and investigate and apply new tools

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ELEMENT	PERFORMANCE CRITERIA
	and strategies 4.5 Promote successful strategies and reward participants where possible

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.4, 1.6, 1.7, 2.3, 3.1	• Identifies and analyses complex texts to determine legislative, regulatory and business requirements • Reviews reported information to evaluate workplace strategies and improvement practices
Writing	1.5, 1.6, 2.1, 2.2, 2.4, 3.1-3.3, 4.4, 4.5	• Documents findings of investigations from written and oral sources according to organisational requirements • Provides updates about progress using formats and language appropriate to the audience and context
Oral Communication	2.1, 2.2, 3.3-3.5, 4.4, 4.5	• Presents information and seeks advice using structure and language appropriate to audience • Participates in discussions using listening and questioning to elicit the views of others and to clarify or confirm understanding
Numeracy	1.5, 2.4, 3.1, 3.6, 4.4	• Analyses numerical information to measure usage and calculates metric measurements, quantities/ratios and financial data using appropriate tools
Navigate the world of work	1.1, 1.2	• Recognises and follows legislative requirements and organisational policies and procedures associated with own role
Interact with others	1.3, 2.1, 2.2, 3.3-3.5, 4.2, 4.4, 4.5	• Selects and uses appropriate conventions and protocols when communicating with internal and external stakeholders to seek or share information • Collaborates and consults with a range of stakeholders to achieve shared understanding of individual roles in meeting objectives
Get the work done	1.2, 1.4-1.7, 2.3, 2.4, 3.1, 3.2, 3.3, 3.5, 3.6, 4.1, 4.3, 4.4	• Develops plans to manage routine and non-routine tasks for own work group with an awareness of how they contribute to the broader organisation • Uses systematic, analytical processes to set

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		environmental targets, gather relevant information, identify and evaluate alternative approaches • Evaluates outcomes of decisions to identify opportunities for improvement • Uses the main features and functions of digital tools to complete work tasks and access information

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBSUS401 Implement and monitor environmentally sustainable work practices	BSBSUS301 Implement and monitor environmentally sustainable work practices	Recoded to meet AQF standards	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBSUS401 Implement and monitor environmentally sustainable work practices

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 2.0. Version created to better align unit to AQF level.

Performance Evidence

Evidence of the ability to:

- analyse information from a range of sources to identify current procedures, practices and compliance requirements in relation to environmental and resource sustainability
- consult and communicate with relevant stakeholders to seek input and encourage engagement with developing and implementing sustainability improvements, encourage feedback and suggestions and report on outcomes
- plan and organise work group activities to:
  - measure current resource usage
  - solve problems and generate ideas for improvements
  - evaluate and implement strategies to improve resource usage
  - plan, implement and integrate improvements into operations
  - meet environmental requirements
- apply continuous improvement approach to sustainability performance
- apply change management techniques to support sustainability performance.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify relevant internal and external sources of information and explain how they can be used to identify sustainability improvements

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- explain the compliance requirements for the work area with reference to legislation, regulations, codes of practice and workplace procedures that relate to environmental and resource issues
- outline common environmental and energy efficiency issues within the industry
- give examples of benchmarks for environmental and resource sustainability that are relevant to the organisation
- outline organisational systems and procedures that relate to environmental and resource sustainability improvements including:
  - supply chain, procurement and purchasing
  - quality assurance
  - making recommendations and seeking approvals

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the sustainability field of work and include access to:

- relevant legislation, regulations, standards and codes
- relevant workplace documentation and resources
- case studies or, where possible, real situations
- interaction with others.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBSUS402 Implement an environmental management plan

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to interpret requirements of an organisational environmental management plan and effectively implement it.

It applies to individuals who are responsible for sustainability, either as their primary duty or as a part of a work role.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Sustainability

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to implement environmental management plan	1.1 Access and interpret plan and relevant compliance documentation to determine process for implementation 1.2 Prepare schedule for implementation process 1.3 Identify required resources for the implementation in accordance with the schedule 1.4 Identify roles, responsibilities and training needs of individuals and work teams
2. Implement and monitor	2.1 Communicate implementation process to staff

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ELEMENT	PERFORMANCE CRITERIA
the environmental management plan	2.2 Allocate roles and responsibilities, and arrange required training 2.3 Execute implementation process in accordance with schedule 2.4 Provide on-going support to those conducting the plan's activities 2.5 Establish and apply procedures for monitoring activities against achievement targets and adjust resources as necessary
3. Review implementation process	3.1 Review implementation results in accordance with organisational requirements 3.2 Amend process as a result of review or other organisational changes 3.3 Document, maintain and store environmental management records according to organisational requirements

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.3, 1.4	• Identifies and analyses complex texts to determine legislative, regulatory and business requirements • Reviews texts to create a working plan and align resources
Writing	1.2, 2.1, 2.2, 2.5, 3.2, 3.3	• Researches, plans and prepares documentation using format and language appropriate to context, organisational requirements and audience
Oral Communication	2.1, 2.2, 2.4	• Presents information and seeks advice using language appropriate to audience • Participates in discussions using listening and questioning to elicit the views of others and to clarify or confirm understanding
Numeracy	1.3, 2.5	• Applies calculations to identify required resources and timeframes • Monitors results against defined goals and resources
Navigate the	1.4, 2.2, 3.1, 3.3	• Recognises and follows legislative requirements and organisational policies and procedures associated

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world of work		with own role • Allocates roles and enables appropriate training for others
Interact with others	2.1, 2.2, 2.4	• Selects and uses appropriate conventions and protocols when communicating with internal and external stakeholders to seek or share information • Collaborates and consults with a range of stakeholders to achieve shared understanding of individual roles in meeting objectives
Get the work done	1.1-1.4, 2.2-2.5, 3.1-3.3	• Interprets and implements actions according to the organisational plan, taking responsibility for sequencing and timing of tasks • Schedules to manage tasks for self and others, with an awareness of how implementation contributes to the broader organisation • Analyses outcomes in accordance with organisational requirements to identify opportunities for improvement.

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBSUS402 Implement an environmental management plan	Not applicable	New unit	No equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBSUS402 Implement an environmental management plan

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- interpret an environmental plan to establish underpinning organisational and legislative requirements
- prepare an implementation process schedule that incorporates resource requirements and meets organisational and legislative obligations
- communicate individual roles and responsibilities to staff
- address training and support needs
- implement and monitor the schedule against required outcomes
- review results and prepare required documentation.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline organisational and legislative requirements in relation to environmental management
- explain methods used to identify and address training needs
- describe how resource requirements are identified
- explain methods for creating and communicating schedules
- explain how to monitor, review and record results of the implementation process.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the sustainability field of work and include access to:

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- relevant legislation and workplace policies and procedures
- interaction with others
- case studies or, where possible, real situations.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBXCS301 Protect own personal online profile from cyber security threats

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package 6.0.

Application

This unit describes the skills and knowledge required to protect own personal online profile from cyber security threats, and to limit the potential impact of online security breaches.

It applies to those working in a broad range of industries and job roles under some supervision and guidance, who protect their own online profile so that it is cyber secure.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Digital Competence – Cyber Security

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify existing and potential security threats to own personal online profile	1.1 Determine all current online accounts and profiles 1.2 Identify common threats to security of online profiles 1.3 Identify industry-specific risk factors that raise risk levels to own personal profile
2. Audit own personal online profile for identified security threats	2.1 Review all online accounts, associated applications and browsers at risk of identified threats according to organisational policies and procedures 2.2 Review public online profiles that can be linked to own personal identity 2.3 Check billing and account records carefully to detect

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ELEMENT	PERFORMANCE CRITERIA
	early indicators of potential theft 2.4 Report identified suspicious cyber activity according to cyber security legislative requirements and organisational policies and procedures
3. Address identified existing and potential security threats to own personal online profile	3.1 Secure personal online profile and remove potential security risks 3.2 Confirm that software used on own desktop/laptop and mobile devices is current and sufficient 3.3 Remove potentially sensitive personal and company information according to organisational policies and procedures 3.4 Create strong passwords across personal and work accounts 3.5 Turn on two factor authentication across all accounts where available 3.6 Adjust privacy/security settings on internet browser, web applications and applicable online accounts 3.7 Delete all unused online accounts/applications according to organisational policies and procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Learning	• Modifies behaviour following exposure to new information
Reading	• Recognises and interprets information from relevant sources to determine organisational expectations relating to cyber security
Technology	• Uses appropriate technology platforms to assist with protecting online profile from cyber security threats
Problem solving	• Uses problem solving skills to understand the nature of potential threat to personal profile or device and to undertake required action

Unit Mapping Information

No equivalent unit. New unit.

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Links

Companion Volume Implementation Guide is found on VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for BSBXCS301 Protect own personal online profile from cyber security threats

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- conduct one audit of own personal online profile and identify existing and potential cyber security threats
- identify and address three potential cyber security risks to own personal online profile.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- legislative requirements relating to reporting cyber security threats
- organisational policies and procedures relating to online profiles, including escalation routes for cyber security issues
- basic principles of cyber security, including:
  - importance of data confidentiality, integrity and availability
  - common cyber security terms
  - common cyber security threats that individuals might be exposed to online
  - secure internet browsing
- risk factors relating to own personal online profile, including:
  - password management practices:
    - strength of created passwords
    - number of passwords used for multiple accounts
    - frequency of change to passwords
  - own work role within organisation
  - regular tasks in own work that raise personal risk level, including internet browsing
  - potential targets for cyber attack in own direct professional network
  - protocols for handling personally identifiable information

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    - physical safety of devices
- industry-specific risk factors and their risk to online profiles
- common strategies, tools and techniques for improving security of own personal online profile, including for:
    - password protection
    - secure password management and account replicating and splitting
    - fundamentals of two-factor authentication
    - billing and account privacy settings
    - software patching
    - connecting to public Wi-Fi via virtual private networks (VPNs)
- common methods and practices for:
    - responding to cyber security issues, including reporting protocols
    - secure internet browsing, including banking and email
- common cyber security threats that individuals and data might be exposed to, including:
    - phishing
    - social engineering
    - social media
    - malware
    - physical threats, including data loss due to working insecurely in public spaces.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of a work environment requiring cyber secure practices, processes and procedures.

Access is required to:

- information and data sources relating to cyber security
- device with active internet connection
- internet browser
- industry standards and organisational procedures required to demonstrate the performance evidence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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BSBXCS302 Identify and report online security threats

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package 6.0.

Application

This unit describes the skills and knowledge required to identify and report online security threats to limit potential impact of cyber security breaches.

It applies to those working in a broad range of industries and job roles under some supervision and guidance who encounter and report online threats during the course of their work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Digital Competence – Cyber Security

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify online security threats	1.1 Review internal policies, procedures and plans relating potential online security breaches 1.2 Identify features of common types of potentially fraudulent communications 1.3 Implement techniques to verify suspicious requests for information
2. Respond to an online security breach	2.1 Block and report potential security breaches on computer and mobile device according to organisational policies and procedures 2.2 Respond to actual security breach or cyber security incident according to organisational response plan 2.3 Report security breach or cyber security incident according to

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ELEMENT	PERFORMANCE CRITERIA
	legislative requirements and organisational policies and procedures
3. Support post- breach review	3.1 Provide information to required personnel to assist in documenting potential and actual breaches 3.2 Support post-incident review and identifying lessons learnt 3.3 Contribute updates to cyber security incident response plan as required and within scope of own role

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Learning	• Modifies behaviour following exposure to new information
Oral communication	• Asks open and closed probing questions and actively listens to ensure that concepts regarding cyber security are well understood
Reading	• Recognises and interprets information from relevant sources to determine organisational expectations relating to cyber security
Writing	• Uses clear, specific and industry-related terminology relating to cyber security for breach and incident reports
Technology	• Uses appropriate technology platforms to share information within the organisation relating to potential online security threats

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for BSBXCS302 Identify and report online security threats

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify and report three different online security threats in a work area.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- legislative requirements relating to identifying and reporting online security threats, including:
  - data protection
  - implications of Notifiable Data Breach legislation on an organisation and other associated Australian privacy laws
  - established international legislation
- organisational policies and procedures relating to online information security breaches, including:
  - blocking and reporting potential security breaches
  - escalation routes for cyber security issues
- common types of online scams and security risks, including phishing scams
- common techniques of phishing and spear phishing used by attackers, including:
  - spam email and SMS text
  - social engineering, including telephone calls, social media and website requests for information
- basic principles of cyber security
- indicators of insecure connection to websites, in particular where data is being collected
- Australian government sources of information on current online security threats
- common online security threats to which individuals might be exposed to, including physical threats

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- common procedures for:
  - mitigating online security threats
  - following organisational cyber security incident response plan
  - responding to cyber security breaches.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of a work environment requiring cyber secure practices, processes and procedures.

Access is required to:

- information and data sources relating to cyber security
- device with active internet connection
- internet browser
- industry standards and organisational procedures required to demonstrate the performance evidence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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BSBXCS303 Securely manage personally identifiable information and workplace information

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package 6.0.

Application

This unit describes the skills and knowledge required to securely manage personally identifiable information (PII) and workplace information.

It applies to those working in a broad range of industries and job roles under some supervision and guidance who manage large amounts of PII and workplace information.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Digital Competence – Cyber Security

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Handle PII and workplace information responsibly	1.1 Review current standards, practices and procedures relating to workplace information 1.2 Identify sensitive data in own workplace environment according to organisational policies and procedures and within scope of own role 1.3 Classify workplace information types according to organisational procedures 1.4 Apply privacy policies to all data devices that require confidentiality
2. Store and share PII and workplace information	2.1 Organise obtained data sets in an easily retrievable format 2.2 Implement required access control protocols for identified

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ELEMENT	PERFORMANCE CRITERIA
securely	sensitive data 2.3 Confirm that data is accurate, up-to-date, and comprehensive 2.4 Identify and report malfunctioning infrastructure and attacks on infrastructure that pose a threat to data integrity
3. Apply information protection protocols	3.1 Conduct back-up of on-site and off-site data according to organisational policies and procedures 3.2 Conduct privacy impact assessments on data 3.3 Confirm adherence to data protection compliance standards

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Learning	• Modifies behaviour following exposure to new information
Numeracy	• Interprets mathematical data
Oral communication	• Asks open and closed probing questions and actively listens to clarify consultations
Reading	• Recognises and interprets information from relevant sources to determine organisational expectations and legal requirements
Planning and organising	• Efficiently and logically sequence the stages of data management
Technology	• Uses appropriate technology platforms to assist with data storage, data retrieval and data management

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for BSBXCS303 Securely manage personally identifiable information and workplace information

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- use data protection techniques to manage workplace information for one work area over the life of a small project or work cycle.

In the course of the above, the candidate must store and share personally identifiable information (PII) in a secure manner.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- legislative requirements relating to securely managing PII and workplace information, including:
  - data protection
  - implications of Notifiable Data Breach legislation on an organisation and other associated Australian privacy laws
  - established international legislation
- organisational policies and procedures relating to:
  - identifying sensitive data
  - securely storing, sharing and managing customer information
  - encryption, and protocols for its uses
  - data classification
  - media and document labelling
  - monitoring and reporting faults and malfunctions in IT infrastructure
- industry best practice and Australian government sources of information relating to access control, including:

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  - password protection
  - storage locations
  - securely sharing
  - data deletion
- risks and benefits of cloud storage
- risks of communicating sensitive information via non-secure means e.g. email and SMS
- framework for distributed storage
- technologies, techniques and protocols for storing and retrieving data
- data protection protocols and industry-standard compliance standards relating to:
  - back-up
  - data sharing
  - data storage
  - disposal of sensitive information
  - privacy impact assessments.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of a work environment requiring cyber secure practices, processes and procedures.

Access is required to:

- information and data sources relating to cyber security
- device with active internet connection
- internet browser
- industry standards, organisational procedures, and legislative requirements required to demonstrate the performance evidence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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BSBXCS401 Maintain security of digital devices

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package 6.0.

Application

This unit describes the skills and knowledge required ensure the cyber security of digital devices.

It applies to those working in a broad range of industries who as part of their job role ensure the security of digital devices used.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Digital Competence – Cyber Security

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify appropriate security for digital devices	1.1 Create and maintain register of digital devices on organisation's network 1.2 Confirm what information is held on the registered devices 1.3 Categorise level of risk associated with each device based on sensitivity of information stored 1.4 Select required security protocol to manage level of risk associated with each device
2. Apply protection strategies to digital devices	2.1 Install and run latest anti-malware on each device 2.2 Create strong passwords across personal and work accounts 2.3 Switch on two-factor authentication where available

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ELEMENT	PERFORMANCE CRITERIA
	2.4 Encrypt devices according to instructions 2.5 Develop associated physical security plan and communicate this to whole organisation
3. Evaluate effectiveness of applied protection strategies	3.1 Review number of breaches and business impact over review period 3.2 Monitor latest developments in digital security 3.3 Support organisation to select most appropriate security strategies
4. Patch software across multiple devices	4.1 Apply updates to software and applications across own desktop and mobile devices 4.2 Ensure that new devices are updated and configured correctly as part of initial start-up procedure

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Learning	• Modifies behaviour following exposure to new information
Numeracy	• Interprets mathematical data • Completes at times complex calculations and records mathematical data
Reading	• Recognises and interprets information from relevant sources to determine organisational expectations relating to cyber security
Technology	• Uses appropriate technology platforms to assist with protection strategies relating to cyber security

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for BSBXCS401 Maintain security of digital devices

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- use best practice protection strategies to maintain the security of two different electronic devices over the life of a small project or work cycle
- conduct gap analysis to evaluate effectiveness of all applied best practice strategies.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- external party security risks and methods for mitigating risk
- industry-accepted best practice protection strategies for improving security on digital devices:
  - password management
  - use of anti-virus software
  - virtual private network (VPN) use on public Wi-Fi
  - router settings
  - fundamentals of two-factor authentication
  - encryption
  - patching software applications
- risk management methodologies
- tools and techniques to conduct gap analysis of strategy performance
- data protection requirements for:
  - stored data
  - data in transit
  - data in third party applications
- mobile device security strategies.

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Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of a work environment requiring cyber secure practices, processes and procedures.

Access is required to:

- information and data sources relating to cyber security
- device with active internet connection
- internet browser
- industry standards and organisational procedures required to demonstrate the performance evidence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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BSBXCS402 Promote workplace cyber security awareness and best practices

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package 6.0.

Application

This unit describes the skills and knowledge required to promote cyber security in a work area.

It applies to those working in a broad range of industries who as part of their job role support policies, procedures and practice within an organisation that promote cyber security.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Digital Competence – Cyber Security

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Develop cyber security awareness in work area	1.1 Establish current level of awareness in work area relating to cyber security 1.2 Create and maintain cyber security awareness program that reflects organisation-wide best practice 1.3 Contribute to developing cyber security policies and procedures, and communicate to required personnel
2. Support effective cyber security practices in work area	2.1 Review cyber security practices according to organisational policies and procedures 2.2 Arrange training and information updates as required, and maintain related records 2.3 Present insights from review and training to required

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ELEMENT	PERFORMANCE CRITERIA
	personnel, and potential related impacts on workplace
3. Review cyber security awareness in work area	3.1 Review latest cyber security threats and trends impacting organisations 3.2 Document outcomes of review and suggested improvements for consideration by required personnel 3.3 Communicate review outcomes and cyber security improvement requirements according to organisational policies and procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Learning	• Modifies behaviour following exposure to new information • Shares insights gained from cyber security trend analysis
Oral communication	• Consults with stakeholders to inform decision making
Reading	• Interprets information from relevant sources to determine organisational expectations
Writing	• Uses clear, specific and industry-related terminology relating to cyber security in workplace documents
Planning and organising	• Maintains records and documentation relating to cyber security protection
Teamwork	• Works collaboratively with interdisciplinary teams to promote cyber security
Technology	• Uses appropriate technology platforms to assist with promoting cyber security within work area

Unit Mapping Information

No equivalent unit. New unit.

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Links

Companion Volume Implementation Guide is found on VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for BSBXCS402 Promote workplace cyber security awareness and best practices

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop one set of policies and procedures for a work area that promote cyber security awareness and practices
- arrange training or updates to be provided to colleagues that support practice or awareness in relation to two different cyber security matters.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- legislative requirements relating to cyber security context of performance evidence, including:
  - data protection
  - implications of Notifiable Data Breach legislation on an organisation and other associated Australian privacy laws
  - established international legislation
- organisational policies and procedures relating to:
  - securely storing, sharing and managing information
  - encryption, and protocols for its uses
  - data classification and management
  - media/document labelling
  - data governance
  - acceptable use
  - bring your own device
- Australian government sources of information on current threats
- risks associated with workplace cyber security
- strategies and techniques for promoting workplace cyber security

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- techniques for:
  - implementing and promoting workplace cyber security awareness
  - facilitating training that promotes cyber security awareness, including the use of simulated activities.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of a work environment requiring cyber secure practices, processes and procedures.

Access is required to:

- information and data sources relating to cyber security
- device with active internet connection
- internet browser
- industry standards and organisational procedures required to demonstrate the performance evidence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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BSBXCS403 Contribute to cyber security threat assessments

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package 6.0.

Application

This unit describes the skills and knowledge required to support maintaining a cyber secure network through identifying cyber security threats for an organisation.

It applies to those working in a broad range of industries who as part of their job role contribute to assessments of level of risk relating to real and potential cyber security breaches.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Digital Competence – Cyber Security

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Contribute to reviewing workplace cyber security threats	1.1 Identify relevant organisational data security/protection policies and procedures 1.2 Contribute to organisation-wide cyber security audits 1.3 Contribute to identifying threats to workplace security of cyber security threats
2. Assist in assessing risks and potential business impact of cyber security threats	2.1 Assist in assessing cyber security risks and their likelihood, consequences and suggested mitigation strategies 2.2 Assist in reviewing industry level threats and best practice cyber security strategies 2.3 Assign risk levels for identified cyber risks based

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ELEMENT	PERFORMANCE CRITERIA
	on measurement scale 2.4 Contribute to identifying impact of risks
3. Finalise cyber security threat assessment	3.1 Document impact findings that include recommendations for required responses to control risks 3.2 Support the communication of cyber security threat assessment outcomes and recommendations to required personnel 3.3 Seek feedback as required on assessment findings 3.4 Assist in integrating feedback to finalise threat assessment 3.5 Distribute or store final threat assessment according to organisational policies and procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Learning	• Modifies behaviour following exposure to new information
Numeracy	• Interprets mathematical data • Completes at times complex calculations and records mathematical data
Oral communication	• Asks open and closed probing questions and actively listens to clarify consultations • Communicate findings of assessment of business impact to required personnel
Reading	• Recognises and interprets information from relevant sources to determine organisational expectations
Writing	• Uses clear, specific and industry-related terminology relating to cyber security • Produces written reports on business impact of assessed threat
Teamwork	• Works collaboratively with interdisciplinary teams to ensure procedures are implemented
Technology	• Uses appropriate technology platforms to assist with cyber security threat assessments

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Unit Mapping Information

No equivalent unit. New unit.

Links

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Assessment Requirements for BSBXCS403 Contribute to cyber security threat assessments

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- provide non-technical support to a cyber security threat assessment in a work area by describing three threats
- communicate and distribute findings of the identified threats.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- legislative requirements relating to contributing to cyber security threat assessments, including:
  - data protection
  - implications of Notifiable Data Breach legislation on an organisation and other associated Australian privacy laws
  - established international legislation
- potential organisational impact of cyber attacks
- online risks affecting organisation’s operations
- common procedures for cyber threat rating and modelling
- strategies, techniques and tools that improve an organisation’s cyber security and audit processes
- organisational policies and procedures for information security, including:
  - confidentiality, integrity, and availability
  - communicating threat assessment findings.

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Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of a work environment requiring cyber secure practices, processes and procedures.

Access is required to:

- information and data sources relating to cyber security
- device with active internet connection
- internet browser
- industry standards and organisational procedures required to demonstrate the performance evidence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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BSBXCS404 Contribute to cyber security risk management

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package 6.0.

Application

This unit describes the skills and knowledge required to contribute to cyber security risk management, which includes assisting in developing and managing associated risk management strategies.

It applies to those working in a broad range of industries and job roles who work alongside technical experts to develop cyber security risk-management strategies.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Digital Competence – Cyber Security

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Contribute to recommending risk management strategies that mitigate cyber security risk	1.1 Consult with stakeholders to determine scope of risk management appropriate to organisation and industry 1.2 Review relevant critical cyber risk management strategies appropriate to level of risk 1.3 Assist in developing suitable cyber security response options according to organisational policies and procedures 1.4 Present options for risk management strategies for approval within scope of own role 1.5 Document approved risk management strategies

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ELEMENT	PERFORMANCE CRITERIA
2. Support implementation of approved risk management strategies in response to risk	2.1 Support communication of approved risk management strategies to required personnel 2.2 Contribute to monitoring cyber security risk according to selected risk management strategies 2.3 Assist in determining compliance with implemented cyber risk mitigation strategies 2.4 Address non-compliance within scope of own role and escalate where required according to organisational policies and procedures 2.5 Assist in establishing feedback processes that provide warning of potential new risks according to organisational requirements
3. Review and revise implemented risk management strategies	3.1 Identify benchmarks to track effectiveness of risk management strategies 3.2 Support evaluation of effectiveness of implemented strategies 3.3 Update risk management strategies with new information as required

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Learning	• Modifies behaviour following exposure to new information
Numeracy	• Interprets mathematical data
Oral communication	• Asks open and closed probing questions and actively listens to clarify consultations • Communicate proposed risk management strategies to required personnel
Reading	• Recognises and interprets information from relevant sources to determine organisational expectations and legal requirements
Writing	• Uses clear, specific and industry-related terminology relating to cyber security • Maintains and updates a range of documents, including risk registers and incident response plans
Planning and	• Manages incident response plans

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Skill	Description
organising	
Teamwork	• Works collaboratively with interdisciplinary teams develop cyber risk management strategies
Technology	• Uses appropriate technology platforms to assist with cyber security risk management

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for BSBXCS404 Contribute to cyber security risk management

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- contribute to developing and implementing risk management strategies that control two different identified cyber security risks and document the response option applied to each risk
- support evaluation of effectiveness of each implemented strategy.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- legislative and regulatory requirements relating to contributing to cyber security risk management, including:
  - data protection legislation
  - notifiable data breach legislation
  - Australian privacy laws
  - established international legislation
- key risk management strategies, including:
  - regular organisational training
  - regular threat assessment
  - cyber security incident response plan
  - clear escalation routes
- organisational policies and procedures, including for:
  - analysing and reviewing risk management methodologies
  - developing communications plans
  - evaluating effectiveness of risk management strategies
  - monitoring cyber risk

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  - reviewing currency of risk register
- industry-specific knowledge of suitable procedures for applying risk management strategy
- guidelines required for updating technology
- business process design principles in relation to risk management
- reporting mechanisms for tracking organisational cyber security maturity.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of a work environment requiring cyber secure practices, processes and procedures.

Access is required to:

- information and data sources relating to cyber security
- device with active internet connection
- internet browser
- industry standards, organisational procedures, and legislative requirements required to demonstrate the performance evidence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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BSBXCS405 Contribute to cyber security incident responses

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package 6.0.

Application

This unit describes the skills and knowledge required to assist in responding to and containing cyber security incidents.

It applies to those working in a broad range of industries and job roles who work alongside technical experts to develop cyber security risk-management strategies.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Digital Competence – Cyber Security

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Confirm cyber security incident and contribute to its containment	1.1 Confirm nature and location of cyber security incident according to organisational policies and procedures 1.2 Estimate risk, likelihood and potential consequence of incident according to organisational response procedures 1.3 Assist in ensuring that cyber incident is contained according to legislative requirements and organisational cyber security incident response plan 1.4 Assist in confirming no further risks according to legislative requirements and organisational response procedures
2. Communicate information on cyber security incident	2.1 Escalate cyber security incident with required workplace personnel according to organisational policies and

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ELEMENT	PERFORMANCE CRITERIA
	procedures 2.2 Consult with required internal and external stakeholders on communication needs relating to cyber security incident 2.3 Assist in alerting required external parties according to legislative requirements and organisational procedures
3. Contribute to post-incident activities	3.1 Support post-breach review and reporting 3.2 Assist in identifying lessons learnt from incident response and recommended changes to cyber security response plan 3.3 Assist in updating cyber security response plan to reflect review outcomes according to organisational policies and procedures 3.4 Communicate lessons learnt and recommendations to required personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Learning	• Modifies behaviour following exposure to new information • Understands developments within cyber security protection and is able to advise on which options are appropriate
Numeracy	• Interprets mathematical data • Completes at times complex calculations and records mathematical data
Oral communication	• Asks open and closed probe questions and actively listens to clarify consult with business and ICT technicians • Communicate findings of assessment of business impact to required personnel
Reading	• Recognises and interprets information from relevant sources to determine organisational expectations and legal requirements
Writing	• Uses clear, specific and industry-related terminology relating to cyber security • Produce written reports on business impact of assessed threat
Planning and organising	• Manages cyber security incident response plan including protection strategies through to responding to breaches

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Skill	Description
Technology	• Uses appropriate technology platforms to assist with cyber security incident responses

Unit Mapping Information

No equivalent unit. New unit.

Links

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Assessment Requirements for BSBXCS405 Contribute to cyber security incident responses

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package 6.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to assist in:

- responding to two different cyber security incidents in a work area
- conducting one post-breach review.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- legislative requirements relating to contributing to cyber security incident responses, including:
  - data protection
  - implications of notifiable data breach legislation on an organisation and other associated Australian privacy laws
  - established international legislation
- procedures for developing communications plans
- organisational policies and procedures relating to cyber security incident response, including procedures for:
  - confirming nature and location of incidents
  - determining risk, likelihood, and consequence of incidents
  - containing incidents
  - notifying internal and external stakeholders of incident
  - internal and external communications
  - conducting post-breach reviews
- reporting methods for cyber security incidents, including official government channels
- key features of cyber security incident response plan
- risk mitigation strategies and procedures relating to cyber security

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- internal and external stakeholders involved in responding to cyber security incidents.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of a work environment requiring cyber secure practices, processes and procedures.

Access is required to:

- information and data sources relating to cyber security
- device with active internet connection
- internet browser
- industry standards, organisational procedures, and legislative requirements required to demonstrate the performance evidence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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BSBXTW301 Work in a team

Modification History

Release	Comments
Release 2	This version first released with BSB Business Services Training Package Version 5.0. Version created to rectify typographical error
Release 1	This version first released with BSB Business Services Training Package Version 4.0.

Application

This unit describes the skills and knowledge required to work effectively as part of permanent or project based teams in a workplace within an industry.

This unit applies to a wide range of workers, but has a specific focus on the teamwork skills required for workers with limited responsibility for others.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Cross Sector Skill

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Identify individual work tasks within a team	1.1 Identify own responsibilities according to organisational policies and procedures 1.2 Identify own role and task requirements within team 1.3 Articulate team structure and roles of other team members 1.4 Plan and prioritise own tasks according to given time frames and

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	team requirements
2. Contribute effectively to team goals	2.1 Identify team goals and own responsibilities relevant to achieving team goals 2.2 Contribute ideas and information in team planning discussions 2.3 Share knowledge and skills with team members to enable effective teamwork and seek or offer support as required
3. Work effectively with team members	3.1 Communicate clearly and respectfully with team members, considering the needs of those from diverse backgrounds and roles 3.2 Collaborate effectively with team members, including those who are working remotely on workplace issues 3.3 Seek and provide assistance and feedback to team members where appropriate
4. Communicate effectively with team leaders	4.1 Receive and confirm understanding of task instructions or directions 4.2 Communicate personal commitments in a timely manner 4.3 Identify and report any issues preventing the completion of workplace tasks, according to organisational requirements 4.4 Seek and act upon feedback to improve personal performance and/or behaviour

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	**Description**
Interact with others	• Uses appropriate communication practices when communicating with others • Cooperates and collaborates with team members
Get the work done	• Plans and implements routine tasks and workload making limited decisions on sequencing, timing and collaboration, seeking assistance in setting priorities • Uses digital technology to find, record or communicate information

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Unit Mapping Information

No equivalent unit. New unit.

Links

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Assessment Requirements for BSBXTW301 Work in a team

Modification History

Release	Comments
Release 2	This version first released with BSB Business Services Training Package Version 5.0. Version created to rectify typographical error
Release 1	This version first released with BSB Business Services Training Package Version 4.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria, and foundation skills of this unit, including on at least one occasion, evidence of the ability to:

- identify individual and team roles and responsibilities
- plan assigned tasks according to priorities and deadlines, and in accordance with organisational requirements
- contribute to achievement of team goals
- share knowledge, ideas and problems with team members
- act on feedback in a constructive manner
- collaborate with a remote team member on a workplace issue.
-

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes knowledge of:

- organisational requirements relevant to working in a workplace team:
  - workplace policies
  - codes of conduct
  - organisational reputation and culture
- typical compositions of workplace teams, and the roles and responsibilities of team members within organisations
- techniques for giving and receiving feedback in a constructive manner
- methods to support team members
- key principles of cross-cultural communication and communication with individuals with special needs or disabilities

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- methods and tools to work with others remotely:
  - collaboration via phone or mobile
  - collaboration via video conference
  - collaboration via other digital tools or software
- issues that may impact team performance and outcomes
- techniques to collaborate effectively with those working remotely.
-

Assessment Conditions

Mandatory conditions for assessment include:

- A safe working or simulated environment

Assessors of this unit must satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBXTW401 Lead and facilitate a team

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 4.0.

Application

This unit describes the skills and knowledge required to effectively lead and facilitate a team in a workplace within any industry.

This unit has a specific focus on the teamwork skills required for team leader or supervisor level (depending on organisational structure) workers with responsibility for others or teams.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Cross Sector Skill

Elements and Performance Criteria

Elements Elements describe the essential outcomes.	**Performance Criteria** Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Plan team outcomes	1.1 Identify common objectives of workplace team, responsibilities and required outcome(s) 1.2 Use performance plans to establish expected outcomes, goals, and behaviours for individual team members in accordance with team objective and relevant policies 1.3 Select appropriate strategies to ensure team members are accountable for their roles and responsibilities 1.4 Plan for contingencies that could impact the team

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2. Coordinate team and individuals	2.1 Communicate common team objectives and responsibilities to team members 2.2 Allocate tasks to team members based on staff expertise or development potential and provide appropriate instructions 2.3 Facilitate open and respectful communication and collaboration between team members, considering the needs of those from diverse backgrounds 2.4 Identify opportunities for cross collaboration amongst external and internal teams and individuals
3. Support team	3.1 Provide coaching to staff to enhance workplace culture 3.2 Support individuals according to organisational requirements to work towards common team goals 3.3 Facilitate team to identify, brainstorm, report and resolve task related issues and inefficiencies 3.4 Use problem solving skills to deal with any team, task or individual challenges
4. Monitor team performance	4.1 Measure team member performance against agreed work plans 4.2 Provide timely and constructive performance feedback to team members according to expected organisational standards 4.3 Identify specific learning and development opportunities to improve team and individual performance and behaviours 4.4 Implement action plans to address individual and team training needs

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Interact with others	• Uses appropriate communication practices when communicating with team members and facilitating activities • Establishes and builds relationships and rapport with team members to foster a positive team environment • Recognises the perspectives of team members and diversity of opinion, and manages conflict as required
Navigate the world of work	• Understands and explains ethical and legal, regulatory and organisational responsibilities to team

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Skill	Description
Get the work done	• Plans, organises and implements work activities in line with organisational policies and procedures

Unit Mapping Information

No equivalent unit. New unit.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBXTW401 Lead and facilitate a team

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 4.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria, and foundation skills of this unit, including on at least one occasion, evidence of the ability to:

- assign tasks to team members with appropriate instruction and considering any required contingencies
- provide feedback and assistance to team members
- collate feedback on individual and team performance
- identify and implement development opportunities for others
- manage conflicts and challenges according to organisational requirements.
-

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes knowledge of:

- organisational requirements relevant to workplace teams:
  - workplace policies
  - codes of conduct
  - organisational reputation and culture
- legislative requirements relevant to the workplace
- facilitation techniques to encourage team cohesion and effectiveness
- mentoring and coaching techniques to support team members
- strategies for conflict resolution and negotiation
- different methods and styles of communication
- key principles of cross-cultural communication and communication with individuals with special needs or disabilities professional behaviours to role model as a leader
- typical workplace contingencies that can impact teams:
  - unplanned leave or absence of workers

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  - re-allocation of work tasks
  - succession planning for important team roles
- teamwork challenges relevant to performance evidence:
  - difficulties performing tasks
  - conflicts with clients or team members
  - potential risks or safety hazards
  - unethical or inappropriate behaviour.

Assessment Conditions

Mandatory conditions for assessment include:

- A safe working or simulated environment

Assessors of this unit must satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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CPCCBC4004A Identify and produce estimated costs for building and construction projects

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to establish the estimated costs associated with the acquisition of materials and labour on building and construction sites, together with the application of relevant overhead costs and margins. Knowledge of physical resource and supplier identification, assessment of the availability of and requirements for skilled labour and application of appropriate codes, regulations and approvals gaining processes is essential.

Application of the Unit

Application of the unit This unit of competency supports the needs of estimators, builders, managers and trade contractors within the construction industry responsible for producing estimated costs for labour, materials, overheads and on-costs on various residential and commercial construction projects within their scope of work as a trade contractor or builder.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Read and interpret plans and specifications.	1.1. Appropriate plans and drawings are correctly identified. 1.2. Project ***plans and specifications*** are read and understood. 1.3. Levels, heights, gradients and other measurements are interpreted. 1.4. Measurements are made and quantities identified from plans and specifications that conform to standard industry practice.
2. Identify and calculate labour costs.	2.1. Types and numbers of appropriate on-site personnel are identified and the time required on site is estimated. 2.2. Labour hours for non-contract elements of on-site work are calculated. 2.3. Costs or rates for required on-site work are calculated.
3. Identify and establish physical resource requirements.	3.1. Physical resource requirements are identified. 3.2. Lists of materials are produced and quantities calculated. 3.3. Quantities are established against project or standard construction contracts. 3.4. Supplier prices for materials and consumables are

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ELEMENT	PERFORMANCE CRITERIA
	obtained. 3.5. Plant or equipment requirements are identified and costed.
4. Develop estimated project costs.	4.1. Appropriate labour rates and material costs are selected and applied. 4.2. Estimates of ***unit costs*** are determined and applied as appropriate. 4.3. Costs to the project of WorkCover, Environmental Protection Agency (EPA) requirements, seeking approvals, waste management site fees and other statutory or additional costs are identified and applied. 4.4. Company overhead recovery and margins are applied. 4.5. Completed estimated ***project costs*** are calculated for inclusion in a tender or bill.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - read and interpret drawings and specifications
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication
- contractual arrangement problem solving
- estimate labour and materials costs from written information
- numeracy skills to calculate labour hours and costs, material quantities and costs
- use appropriate costing software programs.

Required knowledge

Required knowledge for this unit is:

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REQUIRED SKILLS AND KNOWLEDGE

- how to access and interpret:
  - national codes, including Building Code of Australia (BCA) and the Plumbing Code of Australia
  - Australian standards relevant to the industry sector
- includes state or territory and local government building and construction codes, standards and government regulations relevant to the form of building or construction being undertaken (e.g. WorkCover and EPA)
- types of building and construction drawings and specifications
- types, scope and usage of labour through the employee and subcontractor systems
- operation and structure of the organisation's costing and contracting system.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed by the preparation of a detailed estimate of labour, materials and other project costs as part of the preparation of a tender or bill for a residential or commercial construction project relevant to the specific trade or sector. This unit of competency can be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • identify materials required for a project • gather information about material supply • interpret measurements and calculate quantities and costs

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EVIDENCE GUIDE

	• plan and allocate human resources • identify and cost other related costs, such as those required to meet statutory and planning approval processes • produce documentation that meets the timeframes and quality standards established by the organisation • communicate effectively, both verbally and in writing.
Context of and specific resources for assessment	This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • documentation that should normally be available in either a building or construction office • relevant codes, standards and government regulations • office equipment, including calculators, photocopiers and telephone systems • computers with appropriate software to view 2-D CAD drawings, run costing programs and print copies • a technical reference library with current publications on measurement, design, building construction and manufacturers' product literature • a suitable work area appropriate to the construction process. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of

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EVIDENCE GUIDE

the Construction, Plumbing and Services Training Package

- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

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Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Plans and specifications include:

- building codes
- materials lists and quantity schedules
- materials specifications
- sketches or drawings
- statements of requirements.

Plant or equipment requirements include:

- communications equipment
- conveyors
- heavy equipment, such as wheeled and tracked earthmoving equipment, trucks and articulated vehicles
- hoists
- mobile and tower cranes
- on-site equipment, such as:
  - compressors
  - pumps
  - generators
  - portable lighting
  - lifting equipment
  - portable compaction equipment.

Unit costs may include the cost of:

- construction cost per square metre
- installation of pipes per metre
- installation of sanitary ware per unit
- laying of foundation per metre
- laying of slabs per square metre
- laying of steel tray roofing per square metre
- masonry walls per square metre
- painting per square metre
- tiling per square metre.

Project costs include:

- building or construction materials
- communications costs
- cost of meeting statutory requirements, e.g. EPA

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RANGE STATEMENT

- fuels, lubricants and consumables
- organisational and subcontract labour hours
- overheads
- project administration costs
- site facilities, such as:
  - offices
  - toilets
  - lunch rooms
- waste removal fees.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCCM2007 Use explosive power tools

Modification History

Release 1.

Supersedes and equivalent to CPCCCM2007B Use explosive power tools.

The unit of competency was updated to the Standards for Training Packages 2012.

This version first released with CPC Construction, Plumbing and Services Training Package Version 4.0.

Application

This unit of competency specifies the skills and knowledge required to safely and effectively operate explosive power tools (EPTs) using explosive charges in a magazine to fasten materials or fix fasteners to bases.

The unit supports the application of knowledge to safely and effectively use a range of indirect action explosive powered fastening tools used in the construction industry.

It applies to workers who work with EPTs in the construction industry. It involves working under supervision in a team environment.

No licensing, legislative, or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

CPCCWHS2001 Apply WHS requirements, policies and procedures in the construction industry.

Unit Sector

Construction

Elements and Performance Criteria

Elements describe the essential outcomes.	Performance criteria describe what needs to be done to demonstrate achievement of the element.
1. Plan and prepare to set up, operate and maintain indirect action EPTs.	1.1 Review and clarify task to set up, operate and maintain indirect action EPTs. 1.2 Review work health and safety (WHS) requirements for the

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	task in accordance with safety plans and policies. 1.3 Identify safety signage and barricade requirements. 1.4 Review environmental requirements for the task in accordance with environmental plans and legislative requirements. 1.5 Calculate material quantity requirements. 1.6 Check EPTs for operation in accordance with manufacturers' specifications and safety requirements for use of EPT.
2. Set out fasteners.	2.1 Erect identified safety signage and barricades, and fit personal protective equipment (PPE). 2.2 Select fastener in accordance with requirements of the job. 2.3 Set-out fasteners adhering to minimum distances for set out from edge of substrate material in accordance with requirements. 2.4 Position material, check it is level, and temporarily fix or clamp into designed position in accordance with detailed drawings.
3. Operate EPTs.	3.1 Select charge in accordance with the requirements for material, base and penetration. 3.2 Install any attachments and accessories to EPT in accordance with manufacturers' specifications and WHS requirements. 3.3 Load fastener and charge into EPT in accordance with manufacturers' specification. 3.4 Carry out EPT operation and fix fastener into place in accordance with manufacturers' specifications and legislative requirements. 3.5 Check depth of fastening penetration and adjust power regulating device in accordance with conditions. 3.6 Carry out misfire procedures in accordance with manufacturers' specifications and legislative requirements. 3.7 Remove temporary holdings and fixings without damage to material.
4. Maintain EPTs and kit.	4.1 Check safety features of tools for serviceability in accordance with manufacturers' specifications. 4.2 Clean and lubricate tools in accordance with manufacturers' specifications. 4.3 Carry out periodic maintenance service in accordance with manufacturers' specifications. 4.4 Replenish diminished stocks of charges and fasteners to designed effectiveness of EPT kit. 4.5 Check and complete logbook and record maintenance in

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	accordance with manufacturers' specifications.
5. Secure and store EPT equipment and charges.	5.1 Store used charges in designated container in accordance with requirements. 5.2 Store unused fasteners, the EPT and attachments in a carry case in line with manufacturers' specifications.
6. Clean up after operating EPTs.	6.1 Clear work area and dispose of, re-use or recycle materials in accordance with legislation, regulations, codes of practice and task requirements. 6.2 Clean, check, maintain and store tools and equipment in accordance with manufacturers' specifications and workplace requirements.

Foundation Skills

This section describes the language, literacy, numeracy and employment skills essential to performance in this unit but not explicit in the performance criteria.

- reading skills to:
  - interpret legislative requirements including those of Australian Standards and the National Construction Code (NCC)
- numeracy skills to:
  - apply measurements and calculations to fastener set-out
- oral communication skills to:
  - use questioning to identify and confirm requirements
  - discuss cause of problems
  - report work site hazards, including faults in tools, equipment and materials.

Unit Mapping Information

Supersedes and is equivalent to CPCCCM2007B Use explosive power tools.

Links

Companion volumes to this training package are available at the VETNet website - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad

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Assessment Requirements for CPCCCM2007 Use explosive power tools

Modification History

Release 1.

Supersedes and equivalent to CPCCCM2007B Use explosive power tools.

The unit of competency was updated to the Standards for Training Packages 2012.

This version first released with CPC Construction, Plumbing and Services Training Package Version 4.0.

Performance Evidence

To demonstrate competency in this unit, a person must use explosive power tools (EPTs) to fix metal and timber to one steel base, one concrete base, and one masonry base.

In doing this, the person must meet the performance criteria for this unit.

Knowledge Evidence

To be competent in this unit, a person must demonstrate knowledge of:

- jurisdictional legislation and regulations relating to setting up, operating and maintaining indirect action EPTs including those for work health and safety (WHS), and protection of the environment, including:
  - job safety analyses (JSAs)
  - safe work method statements (SWMSs)
  - safety data sheets (SDSs)
  - safety manuals and instructions for plant, tools and equipment
  - signage and barricades
  - personal protective equipment (PPE)
  - environmental and work site safety plans
- requirements of Australian Standards and the National Construction Code (NCC) relating to setting up, operating and maintaining indirect action EPTs
- functions, operations and limitations of EPTs
- EPT materials
- EPT charges and fasteners
- EPT attachments, including channel, rebate and other manufacturer attachments
- EPT, fastener and charge manufacturers' specifications
- processes for interpreting drawings and using information for:
  - setting-out fasteners, including:
    - regulated minimum distances

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        - bases, including concrete, masonry or steel
    - positioning material
- processes for:
    - using EPTs, including:
        - stripping and assembling tools
        - completing log of serviceability
        - maintaining and cleaning tools
        - selecting charges and fasteners applicable to the base material and material being fixed
        - misfire procedures
        - using attachments
        - complying with storage and security regulations and work health and safety (WHS) requirements for the working environment
        - selecting signage
        - test fire
    - maintaining EPTs and kits
    - securing and storing EPT equipment and charges
- materials storage and environmentally friendly waste management
- processes for the calculation of material requirements
- security and storage procedures for equipment and charges
- workplace and equipment safety requirements.

Assessment Conditions

Assessors must satisfy the requirements for assessors contained in the Standards for Registered Training Organisations.

Assessment of performance must be undertaken in the workplace or in a simulated workplace environment. Tasks are to be performed to the level of proficiency and within the time limits expected in a workplace.

Assessors are responsible for ensuring that the person demonstrating competency has access to:

- industry-standard indirect action EPTs, attachments, fasteners and charges
- specifications for tasks requiring use of EPTs
- appropriate documents, materials, tools equipment and PPE currently used in industry
- requirements of appropriate sections of legislation and regulations
- relevant workplace policies and procedures.

Links

Companion volumes to this training package are available at the VETNet website - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad

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CPCCOHS1001A Work safely in the construction industry

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to undertake Occupational Health and Safety (OHS) induction training within the construction industry.

It requires the ability to demonstrate personal awareness of OHS legislative requirements, and the basic principles of risk management and prevention of injury and illness in the construction industry.

Licensing requirements will apply to this unit of competency depending on the regulatory requirements of each jurisdiction.

Application of the Unit

Application of the unit

This unit of competency supports the attainment of the basic OHS knowledge required prior to undertaking designated work tasks within any of the sectors within the construction industry. The unit relates directly to the general induction training program specified by the *National Code of Practice for Induction for Construction Work* (ASCC 2007).

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units

Nil

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Prerequisite units Nil

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify OHS legislative requirements.	1.1. Applicable ***OHS legislative requirements*** relevant to own work, role and responsibilities are identified and explained. 1.2. Duty of care requirements are identified. 1.3. Own responsibilities to comply with ***safe work practices*** are identified and explained.
2. Identify construction hazards and control measures.	2.1. Basic principles of risk management are identified. 2.2. ***Common construction hazards*** are identified and discussed. 2.3. ***Measures for controlling*** hazards and risks are identified.
3. Identify OHS communication and reporting processes.	3.1. OHS communication processes, information and documentation are identified and discussed. 3.2. Role of ***designated OHS personnel*** is identified and explained.

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ELEMENT	PERFORMANCE CRITERIA
	3.3. ***Safety signs and symbols*** are identified and explained. 3.4. Procedures and ***relevant authorities*** for reporting hazards, ***incidents*** and injuries are identified.
4. Identify OHS incident response procedures.	4.1. ***General procedures*** for responding to incidents and ***emergencies*** are identified and explained. 4.2. Procedures for accessing first aid are identified. 4.3. Requirements for the selection and use of relevant ***personal protective equipment*** are identified and demonstrated. 4.4. ***Fire safety equipment*** is identified and discussed.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication skills to:
  - clarify OHS legislative requirements
  - verbally report construction hazards and risks
  - ask effective questions
  - relay information to others
  - discuss OHS issues and information
- comprehension skills to:
  - explain the basic OHS legislative requirements which will be applicable to own work
  - explain the meaning of safety signs and symbols
  - identify common construction hazards
  - discuss the basic principles of risk management.

Required knowledge

Required knowledge for this unit is:

- applicable Commonwealth, State or Territory OHS legislation, regulations, standards, codes of practice and industry standards/guidance notes relevant to own

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REQUIRED SKILLS AND KNOWLEDGE

work, role and responsibilities

- basic principles of risk management and assessment for construction work
- common construction hazards
- common construction safety signage and its meanings
- general construction emergency response and evacuation procedures
- general construction work activities that require licenses, tickets or certificates of competency
- general first aid response requirements
- general procedures for raising OHS issues
- general procedures for reporting OHS hazards, accidents, incidents, emergencies, injuries, near misses and dangerous occurrences
- general procedures for responding to hazards, incidents and injuries
- general workers' compensation and injury management requirements
- OHS hierarchy of controls
- OHS responsibilities and rights of duty holders, including:
  - persons in control of construction work/projects
  - employers and self-employed persons
  - supervisors
  - employees
  - designers
  - inspectors
  - manufacturers and suppliers
- own responsibilities to comply with safe work practices relating to:
  - housekeeping
  - identification of hazards
  - preventing bullying or harassment
  - smoking
  - use of amenities
  - use of drugs and alcohol
- role of OHS committees and representatives
- types of common personal protective equipment and fire safety equipment
- types of OHS information and documentation.

Evidence Guide

EVIDENCE GUIDE

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EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Critical aspects for assessment and evidence required to demonstrate competency in this unit

Evidence must confirm personal awareness of the following:

- applicable OHS legislative and safety requirements for construction work including duty of care
- the range of common construction hazards and procedures for the assessment of risk and application of the hierarchy of control
- OHS communication processes, information and documentation including the role of OHS committees and representatives, the meaning of common safety signs and symbols, and procedures for reporting hazards, incidents and injuries
- general procedures for responding to incidents and emergencies including evacuation, first aid, fire safety equipment and PPE.

Context of and specific resources for assessment

- Resources must be available to support the program including participant materials and other information or equipment related to the skills and knowledge covered by the program.
- It is recommended that the assessment tool designed specifically to support this unit of competency will provide consistency in assessment outcomes.
- Where applicable, physical resources should include equipment modified for people with disabilities
- Access must be provided to appropriate assessment support when required.
- Assessment processes and techniques must be culturally appropriate, and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed
- In all cases where practical assessment is used it will be combined with targeted questioning to assess the underpinning knowledge. Questioning will be undertaken in such a

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EVIDENCE GUIDE

	manner as is appropriate to the oracy, language and literacy levels of the operator, any cultural issues that may affect responses to the questions, and reflecting the requirements of the competency and the work being performed.
Method of assessment	Assessment methods may include more than one of the following: • practical assessment • oral questioning • written test • work-based activities • simulated project based activity

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

OHS legislative requirements relate to:	• Australian standards • construction industry OHS standards and guidelines • duty of care • health and safety representatives, committees and supervisors • licences, tickets or certificates of competency • National Code of Practice for Induction Training for Construction Work • national safety standards • OHS and welfare Acts and regulations • safety codes of practice.
Duty of care requirements relate to:	• legal responsibility under duty of care to do everything reasonably practicable to protect others from harm

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RANGE STATEMENT

	• own responsibilities to comply with safe work practices, including activities that require licences, tickets or certificates of competency • relevant state OHS requirements, including employers and self-employed persons, persons in control of the work site, construction supervisors, designers, manufacturers and suppliers, construction workers, subcontractors and inspectors.
Safe work practices include:	• access to site amenities, such as drinking water and toilets • general requirements for safe use of plant and equipment • general requirements for use of personal protective equipment and clothing • housekeeping to ensure a clean, tidy and safer work area • no drugs and alcohol at work • preventing bullying and harassment • smoking in designated areas • storage and removal of debris.
Risk relates to:	• likelihood of a hazard causing injury or harm.
Principles of risk management include:	• assessing the risks involved • consulting and reporting ensuring the involvement of relevant workers • controlling the hazard • identifying hazards • reviewing to identify change or improvement.
Hazard relates to:	• any thing (including an intrinsic property of a thing) or situation with the potential to cause injury or harm.
Common construction hazards include:	• confined spaces • electrical safety • excavations, including trenches • falling objects • hazardous substances and dangerous goods • HIV and other infectious diseases • hot and cold working environments • manual handling • noise • plant and equipment

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RANGE STATEMENT

	• traffic and mobile plant • unplanned collapse • ultraviolet (UV) radiation • working at heights.
Measures for controlling risk to eliminate or minimise hazards in accordance with the hierarchy of control include:	• elimination • substitution • isolation • engineering control • administrative control • personal protective equipment.
OHS communication processes include:	• discussions with OHS representatives • OHS meetings • OHS notices, newsletters, bulletins and correspondence • OHS participative arrangements • processes for raising OHS issues • toolbox talks • workplace consultation relating to OHS issues and changes.
OHS information and documentation includes:	• accident and incident reports • Acts and regulations • Australian standards • codes of practice • construction documentation and plans • emergency information contact • evacuation plans • guidance notes • job safety analyses • labels • material safety data sheets (MSDS) • proformas for reporting hazards, incidents and injuries • reports of near misses and dangerous occurrences • risk assessments • safe work method statements • safety meeting minutes • site safety inspection reports.
Designated OHS personnel includes:	• first aid officers • OHS committee members

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RANGE STATEMENT

	• OHS representatives • supervisors.
Safety signs and symbols include:	• emergency information signs (e.g. exits, equipment and first aid) • fire signs (e.g. location of fire alarms and firefighting equipment) • hazard signs (e.g. danger and warning) • regulatory signs (e.g. prohibition, mandatory and limitation or restriction) • safety tags and lockout (e.g. danger tags, out of service tags).
Relevant authorities include:	• emergency services (e.g. police, ambulance, fire brigade and emergency rescue) • OHS regulatory authority • supervisor.
Incidents include:	• accidents resulting in personal injury or damage to property • near misses or dangerous occurrences which do not cause injury but may pose an immediate and significant risk to persons or property, and need to be reported so that action can be taken to prevent recurrence, for example: • breathing apparatus malfunctioning to the extent that the user's health is in danger • collapse of the floor, wall or ceiling of a building being used as a workplace • collapse or failure of an excavation more than 1.5 metres deep (including any shoring) • collapse or partial collapse of a building or structure • collapse, overturning or failure of the load bearing of any scaffolding, lift, crane, hoist or mine-winding equipment • damage to or malfunction of any other major plant • electric shock. • electrical short circuit, malfunction or explosion • uncontrolled explosion, fire or escape of gas, hazardous substance or steam • any other unintended or uncontrolled incident or event arising from operations carried on at a

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RANGE STATEMENT

	workplace.
General procedures for responding to incidents and emergencies include:	• basic emergency response (keep calm, raise alarm, obtain help) • evacuation • notification of designated OHS personnel and authorities • notification of emergency services (e.g. when and how) • referring to site emergency plans and documentation.
Emergencies include:	• chemical spill • fire • injury to personnel • structural collapse • toxic and/or flammable vapours emission • vehicle/mobile plant accident.
Personal protective equipment includes:	• aprons • arm guards • eye protection • gloves • hard hat • hearing protection • high visibility retro reflective vests • protective, well fitting clothing • respiratory protection • safety footwear • UV protective clothing and sunscreen.
Fire safety equipment includes:	• breathing apparatus • fire blankets • firefighting equipment.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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CPCCWHS1001 Prepare to work safely in the construction industry

Modification History

Release	Comment
Version 1	Replaces superseded equivalent CPCCOHS1001A Work safely in the construction industry.

Application

This unit of competency specifies the mandatory work health and safety training required prior to undertaking construction work. The unit requires the person to demonstrate personal awareness and knowledge of health and safety legislative requirements in order to work safely and prevent injury or harm to self and others. It covers identifying and orally reporting common construction hazards, understanding basic risk control measures, and identifying procedures for responding to potential incidents and emergencies. It also covers correctly selecting and fitting common personal protective equipment (PPE) used for construction work.

This unit meets the general construction induction training requirements of:

- Part 1.1 Definitions and Part 6.5 of the Model Work Health and Safety Regulations;
- Division 11 of Part 3 of the Occupational Safety and Health Regulations 1996 for Western Australia; and
- Division 3 of Part 5.1 of the Occupational Health and Safety Regulations 2007 for Victoria.

It is expected that site-specific induction training will be conducted prior to conducting construction work.

Licensing, legislative, regulatory or certification requirements apply to this unit. Relevant work health and safety state and territory regulatory authorities should be consulted to confirm jurisdictional requirements.

Pre-requisite Unit

Nil

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Unit Sector

Construction

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions.	
1.	Identify health and safety legislative requirements of construction work.	1.1.	Basic roles, responsibilities and rights of duty holders are identified and explained according to ***jurisdictional health and safety legislative requirements***.
		1.2.	Duty of care requirements are identified.
		1.3.	Construction safe work practices are identified and explained.
2.	Identify construction hazards and risk control measures.	2.1.	Basic principles of risk management are identified.
		2.2.	Construction hazards are identified and discussed.
		2.3.	Purpose and use of PPE are identified and demonstrated.
		2.4.	Measures for controlling hazards are identified.
3.	Identify health and safety communication and reporting processes.	3.1.	Health and safety documents are identified and discussed.
		3.2.	Roles of designated health and safety personnel are identified and explained.
		3.3.	Safety signs and symbols are identified and explained.
		3.4.	Procedures for reporting hazards, incidents and injuries are identified.
4.	Identify incident and emergency response	4.1.	Procedures for responding to incidents and emergencies are identified and explained.
		4.2.	Procedures for accessing first aid are identified.

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procedures.	4.3.	Types and purpose of fire safety equipment are identified and discussed.

Foundation Skills

This section describes the language, literacy, numeracy and employment skills essential to performance in this unit but not explicit in the performance criteria.

Skill	Performance feature
Numeracy skills to:	• locate and recognise numbers commonly used in safety signs.
Oral communication skills to:	• ask questions to clarify instructions • listen to instructions to identify key safety information • tell another person about a construction problem or hazard.
Reading skills to:	• follow simple pictorial safety instructions • follow simple safety instructions that are written in English.
Problem-solving skills to:	• select risk control measures.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

Jurisdictional health and safety legislative requirements must include at least one of the following state and territory Acts or their equivalent:	• Australian Capital Territory: Work Health and Safety Act 2011 • New South Wales: Work Health and Safety Act 2011 • Northern Territory: Work Health and Safety (National Uniform Legislation) Act 2011 • Queensland: Work Health and Safety Act 2011 • South Australia: Work Health and Safety Act 2012 • Tasmania: Work Health and Safety Act 2012 • Victoria: Occupational Health and Safety Act 2004 • Western Australia: Occupational Safety and Health Act 1984.

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Unit Mapping Information

Supersedes and is equivalent to CPCCOHS1001A Work safely in the construction industry

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad

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Assessment Requirements for CPCCWHS1001 Prepare to work safely in the construction industry

Modification History

Release	Comment
Version 1	Replaces superseded equivalent CPCCOHS1001A Work safely in the construction industry.

Performance Evidence

A person demonstrating competency in this unit must satisfy the requirements of the elements, performance criteria, foundation skills, and range of conditions of this unit, in addition to the specific performance and knowledge evidence described below.

The person must:

- identify and orally report two construction hazards
- orally explain how risk could be reduced or removed in relation to those two hazards
- select appropriate personal protective equipment (PPE) to control the risk
- orally explain basic procedures for responding to incidents and emergencies, including types and purpose of the following fire safety equipment:
  - fire blankets
  - fire extinguishers, including water, carbon dioxide, powder and foam
  - hose reels and mains
- identify and orally explain the meaning of required safety signs and symbols
- orally explain the purpose of job safety analyses (JSAs), safe work method statements (SWMS) and safety data sheets (SDS)
- orally explain the roles of the following designated health and safety personnel:
  - first aid officers
  - work health and safety representatives
  - work health and safety committee members
  - supervisors.

The person must also demonstrate correctly fitting to themselves the PPE listed below:

- eye protection
- hearing protection
- hard hat

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- high visibility retro reflective vest.

Knowledge Evidence

A person must demonstrate knowledge of:

- basic duty of care, and the roles, rights and responsibilities of business owners and workers in relation to working safely while undertaking construction work
- basic meaning of the terms ‘hazard’ and ‘risk’
- basic principles of risk management, including the following five steps in order:
  - identify hazard
  - assess risk
  - consult and report
  - control hazard
  - review
- basic procedures for accessing first aid
- construction hazards, including those relating to:
  - asbestos
  - confined spaces
  - electrical: power lines, cords and equipment
  - excavations and trenches, including underground services
  - dust
  - falling objects
  - hazardous substances and dangerous goods
  - hot and cold work environments
  - manual handling
  - noise
  - plant and equipment operation
  - traffic and mobile plant
  - unplanned collapse
  - ultraviolet radiation
  - working at heights, including scaffolding
- construction work that requires a high risk work licence
- types, purpose and use of PPE used in construction, as specified in the performance evidence, and including safety footwear, harnesses and respiratory protection, and ultraviolet (UV) protective clothing and sunscreen
- construction emergencies, including:
  - chemical spill
  - fire
  - injury to personnel
  - structural collapse
  - toxic or flammable vapour emission

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    - vehicle or mobile plant accident
- construction incidents, including:
    - incidents resulting in personal injury or damage to property
    - near misses or dangerous occurrences that do not cause injury but may pose an immediate and significant risk to persons or property, and need to be reported so that action can be taken to prevent recurrence
- safe work practices that should be followed in construction work, including:
    - accessing and using site amenities for drinking water, hand washing and toilets
    - following safety procedures when performing work tasks and using equipment
    - identifying and reporting hazards, incidents and injuries in the workplace
    - keeping the work area clean, tidy and free from debris
    - not using or being affected by drugs and/or alcohol while at work
    - preventing bullying and harassment in the workplace
    - selecting and using required PPE
    - smoking only in designated areas
    - storing and removing waste and debris in designated areas
- meanings and symbols associated with construction safety signs, symbols and tags, including:
    - emergency information signs: exits, emergency equipment and first aid
    - fire signs: location of fire alarms and firefighting equipment
    - hazard signs and symbols: danger and warning
    - regulatory signs and symbols: prohibition, mandatory and limitation or restriction
    - safety and lockout tags: danger and out-of-service tags.

Assessment Conditions

The following must be present and available to learners during assessment activities:

- equipment:
    - all of the PPE listed in the performance evidence
- specifications:
    - state or territory Act relevant to the location of the learner, as specified in the range of conditions.

The assessment of performance evidence must be done by direct observation of the learner by an assessor, either by an assessor observing the learner physically and/or by an assessor observing the learner via audio and visual media in real time.

Assessor requirements

As a minimum, assessors must satisfy the assessor requirements in the Standards for Registered Training Organisations (RTOs) current at the time of assessment.

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Assessors must hold the unit *CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry*, or its successor.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad

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CPCCWHS2001 Apply WHS requirements, policies and procedures in the construction industry

Modification History

Release 1.

Supersedes and equivalent to CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry.

The unit of competency was updated to the Standards for Training Packages 2012.

This version first released with CPC Construction, Plumbing and Services Training Package Version 4.0.

Application

This unit specifies the outcomes required to carry out work health and safety (WHS) requirements through safe work practices in all on- or off-site construction workplaces.

It requires the performance of work in a safe manner through awareness of risks and work requirements, and the planning and performance of safe work practices with concern for personal safety and the safety of others.

The unit covers fundamental WHS requirements necessary to undertake work tasks within any sector in the construction industry. It includes the identification of hazardous materials, including asbestos, and compliance with legislated work safety practices. It does not cover removal of asbestos, which is a licensed activity.

It applies to workers in the construction industry.

This unit also relates directly to the general construction induction training requirements of the Model Work Health and Safety Regulations 2011 and relevant occupational health and safety regulations for Victoria and for Western Australia. Achievement of *CPCCWHS1001 Prepare to work safely in the construction industry* covers these induction training requirements.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Unit Sector

Elements and Performance Criteria

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Elements describe the essential outcomes.	Performance criteria describe what needs to be done to demonstrate achievement of the element.
1. Identify and assess risks.	1.1 Identify, assess and report hazards in the work area to designated personnel. 1.2 Report safety risks in the work area based on identified hazards, to designated personnel. 1.3 Follow safe work practices, duty of care requirements and safe work instructions for controlling risks. 1.4 Contribute to WHS, hazard, accident or incident reports in accordance with workplace procedures, Australian government and state or territory WHS legislation, and relevant information.
2. Identify hazardous materials and other hazards on work sites.	2.1 Correctly identify and, if appropriate, handle and use hazardous materials on a work site in accordance with legislative requirements, and workplace policies and procedures. 2.2 Apply measures for controlling risks and construction hazards effectively and immediately. 2.3 Use appropriate signs and symbols to secure hazardous materials that have safety implications for self and other workers, immediately they are identified. 2.4 Identify asbestos-containing materials on a work site and report to designated personnel.
3. Plan and prepare for safe work practices.	3.1 Identify, wear, correctly fit, use and store correct personal protective equipment and clothing for each area of construction work in accordance with workplace procedures 3.2 Select tools, equipment and materials, and organise tasks in conjunction with other personnel on site and in accordance with workplace procedures. 3.3 Determine required barricades and signage, and erect at the appropriate site location. 3.4 Apply material safety data sheets (MSDSs), job safety analyses (JSAs) and safe work method statements (SWMSs) relevant to the work to be performed.
4. Apply safe work practices.	4.1 Carry out tasks in a manner that is safe for operators, other personnel and the general community, in accordance with legislative requirements, and workplace policies and procedures. 4.2 Use plant and equipment guards in accordance with manufacturers' specifications, work site regulations and Australian Standards. 4.3 Follow procedures and report hazards, incidents and injuries

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	to relevant authorities. 4.4 Recognise and do not use prohibited tools and equipment in areas containing identified asbestos. 4.5 Identify and follow requirements of work site safety signs and symbols. 4.6 Clear and maintain work site area to prevent and protect self and others from incidents and accidents, and to meet environmental requirements.
5. Follow emergency procedures.	5.1 Identify designated personnel in the event of an emergency for communication purposes. 5.2 Follow safe workplace procedures for dealing with accidents, fire and other emergencies, including identification and use, if appropriate, of fire equipment within scope of own responsibilities. 5.3 Describe, practice and effectively carry out emergency response and evacuation procedures when required. 5.4 Carry out emergency first aid treatment of minor injuries and, as soon as possible, accurately report treatment details to designated personnel.

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Supersedes and is equivalent to CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry.

Links

Companion volumes to this training package are available at the VETNet website - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad

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Assessment Requirements for CPCCWHS2001 Apply WHS requirements, policies and procedures in the construction industry

Modification History

Release 1.

Supersedes and equivalent to CPCCOHS2001A Apply OHS requirements, policies and procedures in the construction industry.

The unit of competency was updated to the Standards for Training Packages 2012.

This version first released with CPC Construction, Plumbing and Services Training Package Version 4.0.

Performance Evidence

To demonstrate competency in this unit, a person must apply WHS requirements, policies and procedures on three separate and different occasions in the construction industry.

In doing this, the person must meet the performance criteria for this unit.

Knowledge Evidence

To be competent in this unit, a person must demonstrate knowledge of:

- jurisdictional work health and safety (WHS) and environmental legislation and regulations
- workplace requirements for undertaking all aspects of applying WHS requirements, policies and procedures in the construction industry including interpreting work orders and reporting problems
- procedures and policies for identifying and reporting hazards, safety risks and hazardous materials, including asbestos, in the workplace
- procedures for following safe practices when dealing with hazards and hazardous materials, and controlling risks associated with them
- use of appropriate protective equipment and clothing, choice of tools, use of barricades and signage, and the necessity of following relevant safety procedures as indicated
- methods of safely performing tasks in accordance with legislative requirements and workplace policies and procedures
- procedures for reporting hazards, incidents and injuries
- necessity for keeping work site clear of risks to prevent accidents and to meet environmental requirements
- policies and procedures to be followed in an accident, fire or other type of emergency.

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Assessment Conditions

Assessors must satisfy the requirements for assessors contained in the Standards for Registered Training Organisations.

Assessment of performance must be undertaken in the workplace or in a simulated workplace environment. Tasks are to be performed to the level of proficiency and within the time limits expected in a workplace.

Assessors are responsible for ensuring that the person demonstrating competency has access to:

- appropriate documents, materials, tools, equipment and personal protective equipment currently used in industry
- requirements of appropriate sections of legislation and regulations
- relevant workplace policies and procedures.

Links

Companion volumes to this training package are available at the VETNet website - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad

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CPCPCM2043A Carry out WHS requirements

Modification History

Changes to application, elements and performance criteria, required skills and knowledge, range statement and critical aspects

Not equivalent to CPCPCM2023A

Unit Descriptor

This unit of competency specifies the outcomes required to carry out work health and safety (WHS) requirements through safe work practices in a plumbing and services work environment.

The unit requires the performance of work in a safe manner through awareness of risks, work requirements and the planning and performance of safe work practices with concern for personal safety and the safety of others.

It includes the initial response to workplace emergencies; the safe use of electricity; the identification of hazardous materials, including asbestos; and compliance with legislated work safety practices.

Application of the Unit

This unit of competency supports safe work practices for the plumbing and services industry.

Site location for work application may be either domestic or commercial and may be a new work site or an existing structure or fitting being renovated, extended, restored or maintained. It could also be conducted in an on or off-site workshop or at a customer's premises.

The unit does not cover the removal of asbestos, which is a licensed activity.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Participate in workplace induction.	1.1	***Workplace induction*** is received.
		1.2	Location of emergency equipment is identified.
		1.3	Current workplace emergency and evacuation procedures are identified.
		1.4	Identify safe working conditions with employer.
		1.5	Identify employee and employer rights and responsibilities regarding safe working conditions.
2	Assess risks.	2.1	Hazards in the work area are identified, assessed and reported to designated personnel.
		2.2	WHS issues and risks in the work area are identified, assessed and reported to designated personnel.
		2.3	***Safe work practices***, procedures and instructions are followed.
		2.4	WHS, hazard, accident or incident reports are completed according to workplace procedures and ***statutory and regulatory authorities*** and legislation.
3	Identify hazards and hazardous materials on work site.	3.1	Hazardous materials on a work site are identified, secured and tagged using appropriate signs and symbols; and if appropriate, handled and used according to company and legislated procedures.
		3.2	Measures for controlling risks and construction hazards

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			are applied effectively and immediately.
		3.3	***Asbestos-containing materials (ACM) are identified*** on a work site ***and reported*** to designated personnel.
4	Plan and prepare for safe work practices.	4.1	Quality assurance requirements of company operations and safe work practices are identified and adhered to.
		4.2	Personal protective equipment (PPE) is selected, correctly fitted and used according to the requirements of the job.
		4.3	Tools and equipment are selected consistent with safe work practice requirements, checked for serviceability, and any faults are reported to supervisor.
		4.4	Required barricades, hoardings and signage are determined and erected at job location.
		4.5	Material safety data sheets (MSDS) are identified and applied.
		4.6	***Sustainability principles and concepts*** are observed when preparing for and undertaking work process.
5	Use safe work practices to carry out work.	5.1	Work is carried out safely and according to state or territory statutory requirements and company policy.
		5.2	***Safety hazards*** and common workplace accidents and incidents are identified in the course of work and reported according to policy.
		5.3	Industry, site and personal safety rights and responsibilities are applied.
		5.4	Prohibited tools and equipment in areas with identified asbestos are identified and isolated.
		5.5	Firefighting equipment is selected and used according to type of fire and correct operating procedures.
		5.6	Current site emergency and first aid procedures are followed.

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6	Maintain safety of self and others.	6.1	Safety signs, identified in terms of colour and shape, symbols and alarms, are adhered to.
		6.2	Hazardous chemicals and materials are identified, handled and stored, maintaining the safety to self, others and the environment.
		6.3	Incidents are reported according to legislative requirements and workplace procedures.
		6.4	Common causes of accidents in the industry are identified and prevention measures implemented in line with site induction.
		6.5	Site area is maintained to prevent incidents and accidents and protect self and others
7	Use electricity safely.	7.1	Safest supply and route for electrical supply are determined.
		7.2	Leads are supported and placed according to regulations.
		7.3	Power board visual check is conducted.
		7.4	Leads and equipment are checked for tags and visual damage.
		7.5	Electrical hazards are identified and reported.
8	Apply emergency response.	8.1	***Emergencies*** are identified.
		8.2	***Emergency response*** is provided according to company procedures and requirements.
		8.3	Details of actions taken are reported according to company procedures and requirements using appropriate communications.
9	Clean up work site area.	9.1	Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specifications.
		9.2	Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations

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and standard work practices.

9.3 Information is accessed and documentation completed according to workplace requirements.

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
  - complete written reports and other relevant documentation
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to:
  - evaluate safety issues in the workplace and determine appropriate action
  - recognise WHS hazards, including asbestos, and take all opportunities to alleviate safety problems in a variety of construction work sites and environments
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools or materials
- literacy skills to read and interpret:
  - documentation from a variety of sources
  - MSDS
  - work safety procedures and instructions
- self-management skills to deal calmly and effectively with any potential safety problems and work closely with other team members and supervisors to ensure safe working conditions are maintained
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

Required knowledge

- asbestos management code relating to prevention of exposure
- job safety analysis (JSA) and safe work method statements (SWMS)

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- manual handling techniques
- MSDS
- relevant legislation, regulations and workplace requirements relating to WHS, including hazard reduction and personal safety
- requirements for working in confined spaces and at height, including on rooves
- tools and equipment prohibited from being used near identified ACM
- risk assessment
- safe work practices in normal working environment
- types, possible location and risks of ACM, including serpentine and amphobile groups and their use in common building materials
- workplace and equipment safety requirements
- workplace hazards and their precautions and reduction
- workplace response to emergencies

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • locate, interpret and apply relevant information, standards and specifications for applying safe work practices in the workplace • apply safety requirements throughout the performance of work sequences, including electrical requirements and personal protective clothing and equipment • apply sustainability principles and concepts • undertake site and workplace induction • correctly identify the location of ACM • understand and apply policies and procedures for reporting presence of ACM to designated personnel • assess workplace risks and interpret and apply safe work practices

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- understand workplace requirements for emergency response, including evacuation procedures
- correctly locate and identify workplace firefighting and other safety equipment and appliances
- correctly select and use appropriate processes, tools and equipment
- safely complete all work to specification
- comply with regulations, standards and workplace instructions, procedures and processes, including reporting and documentation
- communicate and work effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or

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simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Workplace induction may include:

- first aid officers and kits

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- personnel competent and/or licensed in the safe handling of asbestos
- site induction work site locations
- specific site WHS issues
- specific site requirements.

Safe work practices are to be according to state and territory legislation and regulations and may include:

- handling of materials
- hazard control procedures and procedures for handling hazardous materials and substances
- PPE prescribed under legislation, regulations and workplace policies and practices
- use of firefighting equipment
- use of first aid equipment
- use of tools and equipment
- workplace environment and safety.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Identifying and reporting asbestos-containing materials:

- includes recognising common types of ACM that may be found in construction materials and buildings
- covers asbestos rope/fabrics, asbestos cement sheeting, asbestos cement piping and lagging on pipes, bituminous waterproof membrane, millboard, asbestos flues, sheeting under ceramic or vinyl floor or wall tiles in wet areas
- involves reporting ACM to person in control of the workplace as set out in the relevant Asbestos Management Code.

Sustainability principles and concepts:

- cover the social, economic and environmental use of resources to meet current and future needs
- may include:
  - selecting appropriate components and material
  - choosing efficient products
  - using material efficiently
  - storing and disposing of hazardous material to ensure minimal environmental impact.

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Safety hazards may include:	• hazards and risks associated with tools and equipment • inflammable materials and fire hazards • lifting practices • lighting, gases, electricity and water • spillage, waste and debris • toxic and hazardous substances • working at heights • working in confined spaces.
Emergencies may include:	• accidents • fires • injuries • sudden illness.
Emergency response may include:	• common site signs • equipment tags • facility or location signs • safety barricades and warning signs • site direction • traffic signs • workplace evacuation involving staff and customers.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.

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CPPSEC3124 Prepare and present evidence in court

Modification History

Release 1.

Supersedes and is equivalent to CPPSEC3009A Prepare and present evidence in court.

Updated to meet the Standards for Training Packages.

This version first released with CPP Property Services Training Package Version 7.0.

Application

This unit specifies the skills and knowledge required to prepare and present evidence in court.

It requires

- sourcing, organising and checking security information to be used as evidence in court proceedings, and checking compliance against rules of evidence and evidence management principles to ensure admissibility
- participating in oral briefing sessions, submitting evidence briefs and preparing documentation and exhibits
- adhering to court procedures and protocols such as those relating to personal presentation, manner and language
- presenting evidence in a clear, concise and unambiguous manner and providing specialist opinion on request.

It applies to people working independently or under limited supervision as members of a security team.

This unit may form part of the licensing requirements for people engaged in security operations in those states and territories where these are regulated activities.

Pre-requisite Unit

Nil

Unit Sector

Security operations

Elements and Performance Criteria

Elements describe the essential outcomes.	Performance criteria describe what needs to be done to demonstrate achievement of the element.

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1. Prepare evidence.	1.1 Review workplace policies and procedures to ensure compliance with legal rights and responsibilities when preparing and presenting evidence in court. 1.2 Source, research and collate case summary and supporting information. 1.3 Select information to be used as evidence in court and confirm its relevance, validity and admissibility in court. 1.4 Organise evidence and check compliance against evidence management principles. 1.5 Interpret requirements for recording and presenting evidence in court.
2. Prepare for court proceedings.	2.1 Participate in oral briefing session with relevant persons to confirm court arrangements, own role and involvement. 2.2 Discuss information to be presented as evidence and clarify negotiation parameters with relevant persons. 2.3 Submit briefs of evidence in a logical sequence and check compliance with rules of evidence to ensure admissibility in court proceeding. 2.4 Conduct a thorough review of material to be used or referred to in court proceeding prior to presentation in court to ensure familiarity, completeness and availability. 2.5 Prepare documentation and exhibits and review to confirm their acceptability for use in court.
3. Attend court proceeding and present evidence.	3.1 Attend court and adhere to court procedures and protocols including those for personal presentation, manner and language throughout proceeding. 3.2 Present admissible evidence in a clear, concise and unambiguous manner and on request, provide specialist opinion within own area of competence and expertise in accordance with evidence requirements. 3.3 Note, file and store outcomes of proceedings and associated documentation and evidence in accordance with evidence management principles.

Foundation Skills

This section describes the language, literacy, numeracy and employment skills essential to performance in this unit but not explicit in the performance criteria:

- language skills to use security industry approved terminology

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- writing skills to:
  - prepare documentation using formal structure and language
  - sequence security information and evidence to present cohesive text
- reading skills to interpret:
  - procedures and policies that clarify legal rights and responsibilities
  - information and evidence that may be technical in nature, and in pictorial, diagrammatic or written formats
- speaking and listening skills to:
  - use active listening to check understanding when participating in briefing sessions
  - participate effectively in spoken interactions in a court setting using strategies to confirm, clarify or repair understanding
  - make constructive additions to what has been said when offering own specialist opinion in court
- numeracy skills to estimate time required to complete work tasks
- problem solving skills to:
  - verify accuracy and sources when gathering information and evidence
  - analyse information to ensure it complies with rules of evidence for admissibility
- teamwork skills to adjust personal communication styles in response to the opinions, values and needs of others
- technology skills to use a range of common information technologies to access, store, study, retrieve, transmit and manipulate data or information that may be used as evidence.

Unit Mapping Information

Supersedes and is equivalent to CPPSEC3009A Prepare and present evidence in court.

Links

Companion volumes to this training package are available at the VETNet website - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=6f3f9672-30e8-4835-b348-205dfcf13d9b

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Assessment Requirements for CPPSEC3124 Prepare and present evidence in court

Modification History

Release 1.

Supersedes and is equivalent to CPPSEC3009A Prepare and present evidence in court.

Updated to meet the Standards for Training Packages.

This version first released with CPP Property Services Training Package Version 7.0.

Performance Evidence

To demonstrate competency in this unit, a person must prepare and present evidence in court in two separate court proceedings.

In doing this, the person must meet the performance criteria for this unit.

Knowledge Evidence

To be competent in this unit, a person must demonstrate knowledge of:

- standard operating procedures and workplace policies that ensure compliance with legislative and regulatory requirements when preparing and presenting evidence in court:
  - anti-discrimination and diversity
  - duty of care
  - licensing requirements and limits of own authority
  - information privacy and confidentiality
  - workplace health and safety (WHS)
- basic research techniques that can be used to gather information and evidence
- evidence management principles
- methods for complying with privacy and confidentiality regulations when gathering, presenting and storing security information
- methods for identifying proofs of an offence
- methods for preserving, maintaining, storing and transporting evidence and exhibits that may be used in court
- operational functions of a range of information technologies used to gather, organise and present security information and evidence
- own areas of competence and expertise to provide specialist opinion in court
- procedures for preparing briefs of evidence
- procedures, protocols and rules to be followed when presenting evidence in court:
  - addressing court personnel
  - language

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  - manner
  - participating and giving evidence
  - personal presentation
  - who's who in court
- purpose of the Evidence Act
- requirements for recording information that is factual and can be used as evidence in court, including meaning of ‘continuity of evidence’
- requirements for recording and reporting incidents
- requirements for taking statements from witnesses
- rules of evidence that can be presented in court:
- contemporaneousness
  - must not be 'hearsay'
  - must not be opinion
  - must be relevant
  - must be admissible
- storage requirements for information that is susceptible to spoil or damage, such as film, tapes and images
- techniques for validating the accuracy and reliability of security information and evidence
- treatment of persons being interviewed
- types of documentation and exhibits that may be presented as evidence in court
- types of law:
  - civil
  - common
  - criminal
  - statute.

Assessment Conditions

Assessors must satisfy the requirements for assessors contained in the Standards for Registered Training Organisations (RTOs). All individuals engaged by a licensed RTO for security licensing purposes must hold both a security trainer’s licence (where such a licence exists within the relevant jurisdiction) and a security operative licence that authorises the security activities about which the individual is training/assessing. Regulators may impose other assessor conditions to meet jurisdictional assessment requirements.

Assessment of performance must be undertaken in an operational workplace environment or environment that reflects workplace conditions. Tasks are to be performed to the level of proficiency and within the time limits that would be expected in a workplace.

The assessment of performance evidence must be done by direct observation of the learner by an assessor, either by an assessor observing the learner physically or by an assessor observing the learner via audio and visual media.

Assessment of performance evidence is only valid where the learner has been assessed performing the role of a security officer.

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Assessors are responsible for ensuring that the person demonstrating competency has access to:

- specifications of assessment tasks to prepare and present evidence in court
- appropriate documents, materials, equipment and personal protective equipment (PPE) currently used in industry
- information technologies required to gather, organise and present security information and documentation
- standard operating procedures and workplace policies related to the security work role and which specify requirements for complying with industry legislation and regulations
- access to a court environment to allow achievement of the performance evidence.

Links

Companion volumes to this training package are available at the VETNet website - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=6f3f9672-30e8-4835-b348-205dfcf13d9b

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CPPSEC5003 Assess security risk management options

Modification History

Release 1 This version first released with CPP Property Services Training Package Release 9.0.

Supersedes and is equivalent to CPPSEC5003A Assess security risk management options. Updated to meet the Standards for Training Packages.

Application

This unit specifies the skills and knowledge required to assess security risks associated with client operations and formulate suitable treatment options as part of a risk management strategy. It includes analysing the client's security objectives and operating environment and establishing criteria to select and prioritise risk treatment options consistent with recognised industry practice and guidelines provided by *ISO 31000:2018 Risk management – Guidelines* (ISO 31000). The unit requires preparing formal reports detailing risk management options and possible consequences of not implementing recommended treatments.

This unit is suitable for those using a broad range of cognitive, technical and communication skills to select and apply methods and technologies to analyse information and provide solutions to sometimes complex problems.

Legislative, regulatory or certification requirements apply in some states and territories to the provision of advice on security solutions, strategies, protocols and procedures. For further information, check with the relevant regulatory authority.

Pre-requisite Unit

None.

Unit Sector

Security/Risk management

Elements and Performance Criteria

Elements describe the essential outcomes.	Performance criteria describe what needs to be done to demonstrate achievement of the element.
1 Assess client's security requirements	1.1 Access and interpret key requirements of legislation, regulations and Australian standard ISO 31000 to understand and comply with requirements for assessing

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and risk environment.		security risk management options.
	1.2	Clarify client security objectives and risk assessment terms of reference in consultation with relevant persons.
	1.3	Source and review information to identify and assess risks associated with operating environment of client.
	1.4	Analyse type, nature and cause of identified security risks and prioritise based on severity and likelihood of occurrence.
	1.5	Document risk assessment outcomes and check to ensure data currency and reliability.
2 Formulate security risk management options.	2.1	Identify security risk treatment options commensurate with risk assessment and client requirements.
	2.2	Research the application of identified treatment options in similar contexts to assess their effectiveness in mitigating risks to client's operating environment.
	2.3	Establish criteria to assess effectiveness of treatment options consistent with recognised industry practice and guidelines provided by ISO 31000.
	2.4	Apply criteria to select and prioritise recommended treatment options.
3 Finalise and present security risk management options.	3.1	Finalise and document security risk assessment detailing recommended risk management options and possible consequences of not implementing recommended treatments.
	3.2	Check report to ensure analysis and recommendations are clear, coherent and consistent with terms of reference, and supported by verifiable information.
	3.3	Present report to relevant persons within agreed timeframes and explain identified security risks and treatment options to enhance understanding and acceptance of recommendations.
	3.4	Complete and secure risk assessment documentation in a manner that facilitates future retrieval and maintains client confidentiality according to workplace and

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regulatory requirements.

Foundation Skills

As well as the foundation skills explicit in the performance criteria of this unit, candidates require:

- oral communication skills to negotiate client agreement
- writing skills to prepare succinct and logically structured assessment reports
- numeracy skills to apply basic probability statistics when assessing security risks.

Unit Mapping Information

Supersedes and equivalent to CPPSEC5003A Assess security risk management options.

Links

Companion volumes to this training package are available at the VETNet website - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=6f3f9672-30e8-4835-b348-205dfcf13d9b

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Assessment Requirements for CPPSEC5003 Assess security risk management options

Modification History

Release 1 This version first released with CPP Property Services Training Package Release 9.0.

Supersedes and is equivalent to CPPSEC5003A Assess security risk management options. Updated to meet the Standards for Training Packages.

Performance Evidence

To demonstrate competency, a candidate must meet the performance criteria of this unit by assessing security risks and formulating risk management options associated with two of the following scenarios:

- security of a mass gathering
- security of a crowded place
- asset security.

Knowledge Evidence

To be competent in this unit, a candidate must demonstrate knowledge of:

- legislative and regulatory requirements that apply when assessing security risk management options:
  - key requirements of legislation, regulations and codes of conduct governing security risk management in the jurisdiction of operation
  - legal rights and responsibilities of employers, supervisors and employees associated with work health and safety and duty of care
  - licensing requirements in the security industry
  - trespass and removal of persons
  - use of force
- application of integrated security measures including physical security, manpower, security technologies and security of personnel and information
- distinction between information and intelligence and methods for validating information sources
- implications for security risk management arising from:
  - *National Guidelines for the Protection of Places of Mass gathering from Terrorism*
  - *Active Armed Offender Guidelines for Crowded Places*
  - *Improvised Explosive Device Guidelines for Crowded Places*
  - *Chemical Weapon Guidelines for Crowded Places*

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    - *Hostile Vehicle Guidelines for Crowded Places*
- methods for determining the type, nature and causes of potential and actual security risks
- methods for prioritising security risks and treatment options based on degree of risk
- process and application of dynamic risk assessment and risk management methods
- purpose of *Australia's Strategy for Protecting Crowded Places from Terrorism* and understanding of:
    - definition of crowded places
    - key security issues for crowded places
    - objectives, characteristics and identification of active armed offenders
    - definition of hostile vehicles and methods of attack
    - signs of chemical weapons attack and recommend response
    - general features of improvised explosive devices and recommended incident response
- recognised industry practice and application of *ISO 31000:2018 Risk management – Guidelines* (ISO 31000) when establishing criteria to assess risks and treatment options
- types of treatment options appropriate to the range of security risks and threats to various client operating environments:
    - assets
    - buildings
    - crowded places
    - mass gatherings.

Assessment Conditions

Assessors must meet the requirements for assessors contained in the Standards for Registered Training Organisations.

All individuals engaged by a licensed RTO for security licensing purposes must hold both a security trainers licence (where such a licence exists within the relevant jurisdiction) and the licence for performing the security activities for which the individual is providing training or assessment. Regulators may impose other assessor conditions to meet jurisdictional assessment requirements.

Assessment must be conducted in the workplace or in a simulated workplace environment. Candidates must have access to:

- legislation, regulations and codes of practice that apply to assessing security risk management options in the jurisdiction of operation
- client instructions and operating environment information, resources and information technologies required to achieve the performance evidence
- ISO 31000
- *National Guidelines for the Protection of Places of Mass gathering from Terrorism*
- *Australia's Strategy for Protecting Crowded Places from Terrorism*
- *National Guidelines for the Protection of Places of Mass gathering from Terrorism*
- *Active Armed Offender Guidelines for Crowded Places*
- *Improvised Explosive Device Guidelines for Crowded Places*

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- *Chemical Weapon Guidelines for Crowded Places*
- *Hostile Vehicle Guidelines for Crowded Places.*

Links

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CPPSEC5004 Develop security risk management plans

Modification History

Release 1 This version first released with CPP Property Services Training Package Release 9.0.

Supersedes and is equivalent to CPPSEC5004A Prepare security risk management plan. Updated to meet the Standards for Training Packages.

Application

This unit specifies the skills and knowledge required to develop comprehensive security risk management plans based on the principles of *ISO 31000:2018 Risk management – Guidelines* (ISO 31000). It includes identifying and evaluating security risks and existing control measures, developing action plans to identify and manage risks, designing risk treatment options and testing them in the field as part of a security risk management strategy.

This unit is suitable for those using a broad range of cognitive, technical and communication skills to select and apply methods and technologies to analyse information and provide solutions to sometimes complex problems.

Legislative, regulatory or certification requirements apply in some states and territories to the provision of advice on security solutions, strategies, protocols and procedures. For further information, check with the relevant regulatory authority.

Pre-requisite Unit

None.

Unit Sector

Security/Risk management

Elements and Performance Criteria

Elements describe the essential outcomes.	Performance criteria describe what needs to be done to demonstrate achievement of the element.
1 Evaluate security risks and controls.	1.1 Access and interpret key requirements of legislation, regulations and Australian standard ISO 31000 to understand and comply with requirements for developing security risk management plans.

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	1.2	Clarify client security requirements and operating environment in consultation with relevant persons.
	1.3	Source and review information to identify security risks.
	1.4	Clearly distinguish and confirm acceptable and unacceptable security risks.
	1.5	Set priorities for risk treatment and assurance of controls.
	1.6	Highlight and specify risks that are high priority to ensure appropriate controls are developed.
	1.7	Evaluate existing controls to determine impact on risk occurrence and implement required modifications.
2 Plan risk management strategies.	2.1	Develop and document action plans that identify tasks, activities and resources required to achieve security risk management objectives.
	2.2	Select security risk control measures based on assessed type, nature, cause and degree of risk associated with identified security risks.
	2.3	Incorporate actions to respond to contingencies when planning risk management strategies.
	2.4	Establish communication and reporting arrangements to maintain currency of action plans in consultation with relevant persons.
3 Design security risk treatment options.	3.1	Assess client's operating environment to confirm potential and real security risks.
	3.2	Select feasible risk treatment options and conduct research to confirm implications for controlling whole or part of security risks.
	3.3	Document and cost recommended risk treatment options to ensure compatibility with nature of risk and client requirements.
	3.4	Consult with relevant persons to verify suitability of recommended risk treatment options and obtain required approvals.

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	3.5	Test risk treatment options in the field and analyse results to verify effectiveness of treatments in the security context.
4 Finalise and present security risk management plan.	4.1	Finalise and document comprehensive security risk management plan in the required format according to workplace requirements.
	4.2	Check security risk management plan to ensure analysis and recommendations are clear, coherent and consistent with client requirements, and based on the principles of ISO 31000.
	4.3	Present risk management plan to relevant persons within agreed timeframes and explain identified security risks and treatments to enhance understanding and acceptance of recommendations.
	4.4	Implement procedures to monitor and review security risk management activities to ensure continuous improvement.
	4.5	Complete and secure risk management plan in a manner that facilitates future retrieval and maintains client confidentiality according to workplace and regulatory requirements.

Foundation Skills

As well as the foundation skills explicit in the performance criteria of this unit, candidates require:

- oral communication skills to negotiate client agreement
- writing skills to prepare succinct and logically structured security risk management plans
- numeracy skills to apply statistical methods and present statistical data.

Unit Mapping Information

Supersedes and equivalent to CPPSEC5004A Prepare security risk management plan.

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Links

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Assessment Requirements for CPPSEC5004 Develop security risk management plans

Modification History

Release 1 This version first released with CPP Property Services Training Package Release 9.0.

Supersedes and is equivalent to CPPSEC5004A Prepare security risk management plan. Updated to meet the Standards for Training Packages.

Performance Evidence

To demonstrate competency, a candidate must meet the performance criteria of this unit by developing and documenting two security risk management plans that meet the requirements of clients with different risk management requirements.

Knowledge Evidence

To be competent in this unit, a candidate must demonstrate knowledge of:

- legislative and regulatory requirements that apply when developing security risk management plans:
  - key requirements of legislation, regulations and codes of conduct for security risk management in the jurisdiction of operation
  - legal rights and responsibilities of employers, supervisors and employees associated with work health and safety and duty of care
  - licensing requirements in the security industry
  - trespass and removal of persons
  - use of force
- application of integrated security measures including physical security, manpower, security technologies and security of personnel and information
- distinction between information and intelligence and methods for validating information sources
- activities to be included in action plans for security risk management
- implications for security risk management arising from:
  - *National Guidelines for the Protection of Places of Mass gathering from Terrorism*
  - *Active Armed Offender Guidelines for Crowded Places*
  - *Improvised Explosive Device Guidelines for Crowded Places*
  - *Chemical Weapon Guidelines for Crowded Places*
  - *Hostile Vehicle Guidelines for Crowded Places*

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- methods for determining the type, nature and causes of potential and actual security risks
- methods for distinguishing between acceptable and unacceptable security risks
- methods for prioritising security risks and treatment options based on degree of risk
- methods for testing treatment options in the field
- process and application of dynamic risk assessment and risk management methods
- purpose of *Australia's Strategy for Protecting Crowded Places from Terrorism* and understanding of:
  - definition of crowded places
  - key security issues for crowded places
  - objectives, characteristics and identification of active armed offenders
  - definition of hostile vehicles and methods of attack
  - signs of chemical weapons attack and recommend response
  - general features of improvised explosive devices and recommended incident response
- recognised industry practice and application of *ISO 31000:2018 Risk management – Guidelines* (ISO 31000) when designing security risk management strategies and treatment options
- types of treatment options appropriate to the range of security risks and threats to various client operating environments:
  - assets
  - buildings
  - crowded places
  - mass gatherings.

Assessment Conditions

Assessors must meet the requirements for assessors contained in the Standards for Registered Training Organisations.

All individuals engaged by a licensed RTO for security licensing purposes must hold both a security trainers licence (where such a licence exists within the relevant jurisdiction) and the licence for performing the security activities for which the individual is providing training or assessment. Regulators may impose other assessor conditions to meet jurisdictional assessment requirements.

Assessment must be conducted in the workplace or in a simulated workplace environment. Candidates must have access to:

- legislation, regulations and codes of practice that apply to developing security risk management plans in the jurisdiction of operation
- client instructions and operating environment information, resources and information technologies required to achieve the performance evidence
- ISO 31000
- *National Guidelines for the Protection of Places of Mass gathering from Terrorism*
- *Australia's Strategy for Protecting Crowded Places from Terrorism*
- *National Guidelines for the Protection of Places of Mass gathering from Terrorism*

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- *Active Armed Offender Guidelines for Crowded Places*
- *Improvised Explosive Device Guidelines for Crowded Places*
- *Chemical Weapon Guidelines for Crowded Places*
- *Hostile Vehicle Guidelines for Crowded Places.*

Links

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CPPSEC5005 Implement security risk management plans

Modification History

Release 1 This version first released with CPP Property Services Training Package Release 9.0.

Supersedes and is equivalent to CPSEC5005A Implement security risk assessment plan. Updated to meet the Standards for Training Packages.

Application

This unit specifies the skills and knowledge required to implement security risk management plans. It includes organising, costing and allocating resources, monitoring emerging security risks and changes in the operating environment against activities and targets in action plans, and reviewing treatment options to update security risk management plans. Risk management plans are implemented based on the principles of *ISO 31000:2018 Risk management – Guidelines* (ISO 31000).

This unit is suitable for those using a broad range of cognitive, technical and communication skills to select and apply methods and technologies to analyse information and provide solutions to sometimes complex problems.

Legislative, regulatory or certification requirements apply in some states and territories to the provision of advice on security solutions, strategies, protocols and procedures. For further information, check with the relevant regulatory authority.

Pre-requisite Unit

None.

Unit Sector

Security/Risk management

Elements and Performance Criteria

Elements describe the essential outcomes.	Performance criteria describe what needs to be done to demonstrate achievement of the element.
1 Organise and allocate resources to support security risk management plan.	1.1 Access and interpret key requirements of legislation, regulations and Australian standard ISO 31000 to understand and comply with requirements for implementing security risk management plans.

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	1.2	Review security risk management plan to clarify and cost resource requirements.
	1.3	Plan and schedule activities and targets to meet requirements of risk management action plans.
	1.4	Define roles, responsibilities and work schedules for implementing security risk management plan and communicate to relevant persons.
	1.5	Organise efficient allocations of resources, equipment and materials required to implement risk management action plans.
	1.6	Disseminate information to support security risk management plan information according to workplace and regulatory requirements.
2 Monitor emerging security risks and operating environment.	2.1	Monitor emerging risks and assess ongoing suitability of implemented security risk treatment options based on ISO 31000 principles.
	2.2	Monitor changes to operating environment and identify and incorporate corrective contingency measures into security risk management plan.
	2.3	Regularly review risk management targets and outcomes against action plans to confirm aims and objectives are achieved.
	2.4	Prepare documentation and guidelines explaining incidence, nature and causes of emerging security risks and contingencies implemented.
3 Review treatment options and update security risk management plan.	3.1	Systematically review effectiveness of security risk treatment options in meeting risk management objectives.
	3.2	Identify and test required corrective measures to confirm suitability to meet risk management objectives.
	3.3	Modify security risk management plan to incorporate corrective measures and address discrepancies between treatment options and risk incidence.

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3.4	Seek feedback from relevant persons on effectiveness of treatment options and make required adjustments to incorporate feedback.
3.5	Cost long and short-term options to accurately estimate resource allocations to support security risk management plan.
3.6	Confirm stages of implementation for security risk management plan and coordinate required resources to ensure availability.
3.7	Finalise updated security risk management plan according to workplace and regulatory requirements.

Foundation Skills

As well as the foundation skills explicit in the performance criteria of this unit, candidates require:

- oral communication skills to negotiate agreements
- writing skills to prepare succinct and logically structured security risk management documents and guidelines
- numeracy skills to apply statistical methods and present statistical data.

Unit Mapping Information

Supersedes and equivalent to CPPSEC5005A Implement security risk management plan.

Links

Companion volumes to this training package are available at the VETNet website - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=6f3f9672-30e8-4835-b348-205dfcf13d9b

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Assessment Requirements for CPPSEC5005 Implement security risk management plans

Modification History

Release 1 This version first released with CPP Property Services Training Package Release 9.0.

Supersedes and is equivalent to CPSEC5005A Implement security risk assessment plan. Updated to meet the Standards for Training Packages.

Performance Evidence

To demonstrate competency, a candidate must meet the performance criteria of this unit by implementing two different security risk management plans.

Knowledge Evidence

To be competent in this unit, a candidate must demonstrate knowledge of:

- legislative and regulatory requirements that apply when implementing security risk management plans:
  - key requirements of legislation, regulations and codes of conduct for security risk management in the jurisdiction of operation
  - legal rights and responsibilities of employers, supervisors and employees associated with work health and safety and duty of care
  - licensing requirements in the security industry
  - trespass and removal of persons
  - use of force
- application of integrated security measures including physical security, manpower, security technologies and security of personnel and information
- distinction between information and intelligence and methods for validating information sources
- work scheduling methods
- activities and targets contained in risk management action plans
- methods for achieving efficiencies when allocating resources, equipment and materials to the implementation of security risk management plans
- implications for security risk management arising from:
  - *National Guidelines for the Protection of Places of Mass gathering from Terrorism*
  - *Active Armed Offender Guidelines for Crowded Places*
  - *Improvised Explosive Device Guidelines for Crowded Places*
  - *Chemical Weapon Guidelines for Crowded Places*

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    - *Hostile Vehicle Guidelines for Crowded Places*
- methods for determining the type, nature and causes of potential and actual security risks
- methods for distinguishing between acceptable and unacceptable security risks
- methods for prioritising security risks and treatment options based on degree of risk
- methods for testing treatment options in the field
- process and application of dynamic risk assessment and risk management methods
- purpose of *Australia's Strategy for Protecting Crowded Places from Terrorism* and understanding of:
    - definition of crowded places
    - key security issues for crowded places
    - objectives, characteristics and identification of active armed offenders
    - definition of hostile vehicles and methods of attack
    - signs of chemical weapons attack and recommend response
    - general features of improvised explosive devices and recommended incident response
- recognised industry practice and application of *ISO 31000:2018 Risk management – Guidelines* (ISO 31000) when implementing and updating security risk management plans
- types of treatment options appropriate to the range of security risks and threats to various client operating environments:
    - assets
    - buildings
    - crowded places
    - mass gatherings.

Assessment Conditions

Assessors must meet the requirements for assessors contained in the Standards for Registered Training Organisations.

All individuals engaged by a licensed RTO for security licensing purposes must hold both a security trainers licence (where such a licence exists within the relevant jurisdiction) and the licence for performing the security activities for which the individual is providing training or assessment. Regulators may impose other assessor conditions to meet jurisdictional assessment requirements.

Assessment must be conducted in the workplace or in a simulated workplace environment. Candidates must have access to:

- legislation, regulations and codes of practice that apply when implementing security risk management plans in the jurisdiction of operation
- risk management plans including action plans, resources and information technologies required to achieve the performance evidence
- ISO 31000
- *National Guidelines for the Protection of Places of Mass gathering from Terrorism*
- *Australia's Strategy for Protecting Crowded Places from Terrorism*
- *National Guidelines for the Protection of Places of Mass gathering from Terrorism*

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- *Active Armed Offender Guidelines for Crowded Places*
- *Improvised Explosive Device Guidelines for Crowded Places*
- *Chemical Weapon Guidelines for Crowded Places*
- *Hostile Vehicle Guidelines for Crowded Places.*

Links

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CPPSEC5006 Develop strategies to implement advanced technology security systems

Modification History

Release 1 This version first released with CPP Property Services Training Package Release 9.0.

Supersedes and is not equivalent to CPPSEC5006A Determine strategy for the implementation of biometrics technology. Unit has been broadened to cover other advanced technologies in addition to biometrics. Updated to meet the Standards for Training Packages.

Application

This unit specifies the skills and knowledge required to develop strategies to implement security systems that employ advanced technologies including biometrics, artificial intelligence (AI), robotics, smart technologies and video integration. It includes assessing risks and threats to client assets, evaluating existing security measures, and devising feasible implementation options that integrate advanced technology security systems within existing security architectures.

This unit is suitable for those using a broad range of cognitive, technical and communication skills to select and apply methods and technologies to analyse information and provide solutions to sometimes complex problems.

Legislative, regulatory or certification requirements apply in some states and territories to the provision of advice on security solutions, strategies, protocols and procedures. For further information, check with the relevant regulatory authority.

Pre-requisite Unit

None.

Unit Sector

Security/Risk management

Elements and Performance Criteria

Elements describe the essential outcomes.	Performance criteria describe what needs to be done to demonstrate achievement of the element.

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1	Assess client's security requirements.	1.1 Access and interpret key requirements of legislation and regulations to understand and comply with requirements for implementing advanced technology security systems.
		1.2 Clarify client assets, security requirements, budget and timeframes for implementing advanced technology security system in consultation with relevant persons.
		1.3 Identify and assess threats to physical and technical security of client.
		1.4 Identify and assess security risks to client assets and prioritise risk levels.
		1.5 Evaluate reliability and effectiveness of existing security measures against identified threats and risks.
		1.6 Document findings and seek specialist assistance as required to assess security requirements of client.
2	Identify requirements for implementing advanced technology security system.	2.1 Assess advanced technology security system options to meet security threats and risks and client requirements.
		2.2 Analyse and confirm physical and technical specifications for advanced technology security system to be installed.
		2.3 Assess existing security architecture to identify requirements for effectively integrating advanced technology security system.
		2.4 Identify resources, skills and training required to implement advanced technology security system.
		2.5 Summarise implementation requirements in a format suitable for further analysis.
3	Design and verify implementation options for advanced technology security system.	3.1 Design system implementation options based on analysis of implementation requirements.
		3.2 Conduct checks to verify implementation options are feasible and comply with time schedules, available resources and budget.
		3.3 Confirm implementation options will effectively control

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		assessed risks and threats to client assets.
4 Finalise strategy for implementing advanced technology security system.	4.1	Finalise and document strategy to implement advanced technology security system.
	4.2	Check strategy to ensure analysis recommendations are clear, coherent and consistent with client requirements, include contingency measures, and are supported by verifiable information.
	4.3	Present strategy to relevant persons within agreed timeframes and explain system design and implementation requirements to enhance understanding and acceptance of recommendations.
	4.4	Complete and secure implementation strategy documentation in a manner that facilitates future retrieval and maintains client confidentiality according to workplace and regulatory requirements.

Foundation Skills

As well as the foundation skills explicit in the performance criteria of this unit, candidates require:

- oral communication skills to negotiate client agreements
- writing skills to prepare logical and sequenced technical specifications for implementing advanced technology security systems
- reading skills to interpret key requirements of technical specifications, plans and designs for security systems.

Unit Mapping Information

Supersedes and non-equivalent to CPPSEC5006A Determine strategy for the implementation of biometric technology.

Links

Companion volumes to this training package are available at the VETNet website - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=6f3f9672-30e8-4835-b348-205dfcf13d9b

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Assessment Requirements for CPPSEC5006 Develop strategies to implement advanced technology security systems

Modification History

Release 1 This version first released with CPP Property Services Training Package Release 9.0.

Supersedes and is not equivalent to CPPSEC5006A Determine strategy for the implementation of biometrics technology. Unit has been broadened to cover other advanced technologies in addition to biometrics. Updated to meet the Standards for Training Packages.

Performance Evidence

To demonstrate competency, a candidate must meet the performance criteria of this unit by developing and documenting two strategies to implement security systems that employ at least two types of advanced technologies from the list below:

- artificial intelligence (AI)
- biometrics
- robotics
- smart technologies
- video integration.

Knowledge Evidence

To be competent in this unit, a candidate must demonstrate knowledge of:

- legislative and regulatory requirements that apply to the implementation of advanced technology security systems:
  - client service standards
  - licensing requirements in the security industry
  - regulatory requirements associated with providing advice on implementing security systems
  - application of *ISO 31000:2018 Risk management – Guidelines* (ISO 31000) when developing strategies to implement advanced technology security systems
- methods for achieving efficiencies when allocating resources, equipment and materials to the implementation of advanced technology security systems
- methods for assessing security risks and threats and determining the type, nature and causes of potential and actual security risks
- methods for comparing and contrasting advanced technology security system information

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- methods for determining security system requirements including single and multiple applications of advanced technologies
- operational principles of, and information technologies used in internet protocol networked security systems
- process and application of dynamic risk assessment and risk management methods
- purpose of *Australia's Strategy for Protecting Crowded Places from Terrorism* and understanding of:
  - definition of crowded places
  - key security issues for crowded places
  - objectives, characteristics and identification of active armed offenders
  - definition of hostile vehicles and methods of attack
  - signs of chemical weapons attack and recommend response
  - general features of improvised explosive devices and recommended incident response
- requirements for integrating a range of advanced technology security systems within existing security architecture across local area networks and wide area networks
- types, functions and parameters of a range of advanced technology security systems involving:
  - AI
  - biometrics
  - robotics
  - smart technologies
  - video integration
- ways that social and cultural differences may be expressed.

Assessment Conditions

Assessors must meet the requirements for assessors contained in the Standards for Registered Training Organisations.

All individuals engaged by a licensed RTO for security licensing purposes must hold both a security trainers licence (where such a licence exists within the relevant jurisdiction) and the licence for performing the security activities for which the individual is providing training or assessment. Regulators may impose other assessor conditions to meet jurisdictional assessment requirements.

Assessment must be conducted in the workplace or in a simulated workplace environment. Candidates must have access to:

- legislation, regulations and codes of practice that apply to the implementation of advanced technology security systems in the jurisdiction of operation
- client specifications and information, resources and information technologies required to achieve the performance evidence
- ISO 31000
- *Australia's Strategy for Protecting Crowded Places from Terrorism.*

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CUAANM301 Create 2D digital animations

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Application

This unit describes the skills and knowledge required to plan and implement design concepts and use industry animation software to create 2D animations for inclusion in interactive media products, short stand-alone animated sequences and basic games.

It applies to individuals who work in a team environment and report to a senior animator, designer, director or producer.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Visual Communication – Animation and Digital Effects

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify animation requirements	1.1 Clarify 2D animation requirements, including design specifications and storyboard in consultation with relevant people 1.2 Clarify target users or audience and requirements with regard to output formats and delivery platforms
2. Generate and assess ideas	2.1 Review animations, artworks and other creative sources that may inspire design ideas 2.2 Generate a range of animation ideas that are technically feasible,

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ELEMENT	PERFORMANCE CRITERIA
	respond to specifications and provide creative solutions to all design issues 2.3 Discuss animation ideas with relevant people
3. Plan approach	3.1 Assess the range of 2D animation software to determine compatibility with design specifications 3.2 Select the most appropriate 2D animation software in consultation with relevant people 3.3 Evaluate initial design ideas and discuss with relevant people to select final design concept to meet production requirements and timelines
4. Produce animations	4.1 Apply basic screen, visual design, communication and animation principles and animation techniques to produce animated sequences based on concept 4.2 Use animation software to import or generate sufficient quantity of key frames to establish required actions 4.3 Check copyright conditions on images from external sources 4.4 Combine animated objects to produce single sequences according to creative requirements and specifications 4.5 Integrate audio assets where necessary 4.6 Adopt safe ergonomic practices when using screens and keyboards for long periods of time 4.7 Save and store animations using appropriate output file formats and standard naming conventions
5. Finalise animations	5.1 Review animations to assess creative solutions to design specifications, appropriateness to users or audience and technical feasibility 5.2 Discuss and confirm with relevant people additional requirements or modifications to overall designs or animations and undertake necessary amendments

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance	Description

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	Criteria	
Reading	1.1, 2.1-2.3, 3.1, 3.3, 4.3, 4.4, 5.1	• Interprets production documentation and design specifications in relation to own duties • Locates and reviews creative sources that may inspire new ideas
Writing	2.3, 4.1, 4.7, 5.2	• Generates and records information for the design of 2D animations in required format • Uses standard naming conventions and version control protocols when saving and storing files
Oral Communication	1.1, 2.3, 3.2, 3.3, 4.1, 5.2	• Obtains information by listening and questioning • Uses clear language to discuss ideas, contribute information, and express requirements
Navigate the world of work	4.3, 4.6	• Complies with legislative requirements relevant to own position
Interact with others	1.1, 2.3, 3.2, 3.3, 4.1, 5.2	• Responds to and draws on others' perspectives when negotiating design of 2D animations • Collaborates to achieve joint outcomes in the design process, playing an active role in facilitating effective group interaction
Get the work done	1.1, 1.2, 2.1-2.3, 3.1-3.3, 4.1, 4.2, 4.4, 4.5, 5.1, 5.2	• Organises and completes animation requirements in line with specifications, arranging consultations at key design points • Takes responsibility for decisions directly related to completion of own tasks • Uses digital software to create drawings and animations and to manage files

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
CUAANM301 Create 2D digital animations	CUFANM301A Create 2D digital animations	Updated to meet Standards for Training Packages. Performance criteria combined and reworded for clarity.	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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Assessment Requirements for CUAANM301 Create 2D digital animations

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Performance Evidence

Evidence of the ability to:

- interpret design specifications and generate a range of creative ideas and concepts that respond to the brief
- collaborate with others to clarify requirements, discuss ideas, select final design concept and review final animations
- use animation software to create 2D animations that meet requirements of design briefs within production deadlines
- correctly name and store animations in appropriate file formats.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain basic animation techniques and principles
- describe screen, visual design and communication principles as they apply to animations
- outline intellectual property considerations if using images from external sources
- identify work health and safety standards as they apply to using screens and keyboards for extended periods of time.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in creative arts industry environments. The assessment environment must include access to:

- production documents and briefs
- resources, equipment and software required for 2D animations

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- interaction with others.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational educational and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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CUAANM302 Create 3D digital animations

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Application

This unit describes the skills and knowledge required to animate simple 3D models and create 3D animations, which may include audio components. The models are for inclusion in interactive media products, short stand-alone animated sequences and basic games.

It applies to individuals who plan and create 3D animated sequences in consultation with relevant personnel in a wide variety of contexts in the digital content industry.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Visual Communication – Animation and Digital Effects

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Clarify animation requirements	1.1 Clarify 3D animation requirements documented in design briefs with relevant personnel 1.2 Examine models to be animated to determine appropriate animation techniques 1.3 Identify file formats and delivery platform for animated sequences 1.4 Identify factors that may influence animation design approach

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ELEMENT	PERFORMANCE CRITERIA
	1.5 Clarify work flow sequences with relevant personnel to ensure production schedule deadlines are met
2. Plan approach	2.1 Research animations, artworks and other creative sources that may inspire ideas 2.2 Generate a range of ideas for animations that are technically feasible, respond to briefs and provide creative solutions to all design issues 2.3 Present ideas to relevant personnel using appropriate design techniques 2.4 Adjust approach to incorporate feedback and agree on final design concept 2.5 Discuss and select 3D animation software with relevant personnel to ensure animated sequences meet technical and creative requirements 2.6 Identify audio assets to support animations as required
3. Produce animated sequences for review	3.1 Create 3D animations using software and animation techniques to suit design requirements 3.2 Adopt safe ergonomic practices when using equipment for long periods of time 3.3 Apply basic animation, screen, visual design and communication principles to produce animations 3.4 Apply real world camera techniques to virtual cameras used in 3D animation as required 3.5 Confirm with relevant personnel that models have not infringed copyright 3.6 Render completed animated sequences using appropriate output file formats 3.7 Save and store animated sequences using standard naming conventions and version control protocols 3.8 Demonstrate 3D animated sequences to relevant personnel for evaluation by agreed deadlines
4. Finalise animated sequences	4.1 Review animated sequences to assess creative solutions to design briefs, appropriateness to users or audience, and technical feasibility 4.2 Discuss and confirm additional requirements or modifications with relevant personnel, and complete changes as required for signoff

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.3, 1.5, 2.1, 2.2, 3.5, 4.1	• Interprets production documentation and design specifications in relation to own duties and copyright issues
Writing	3.6, 3.7, 4.2	• Generates and records information for the design of 3D animations in required format • Uses standard naming conventions and version control protocols when saving and storing files
Oral Communication	1.1, 1.5, 2.3-2.5, 4.2	• Obtains information by listening and questioning • Uses clear language to discuss ideas, contribute information, and express requirements
Navigate the world of work	3.2, 3.5	• Understands and complies with legislative requirements relevant to role
Interact with others	1.1, 1.5, 2.3-2.5, 3.8, 4.2	• Responds to and draws on others' perspectives when negotiating design of 3D animations • Collaborates to achieve joint outcomes in the design process, playing an active role in facilitating effective group interaction
Get the work done	1.1-1.5, 2.1-2.3, 2.5, 2.6, 3.3-3.8, 4.1, 4.2	• Organises and completes animation requirements in line with specifications, arranging consultations at key design points • Takes responsibility for decisions directly related to own tasks • Uses digital software to create drawings and animations and to manage files

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
CUAANM302 Create	CUFANM302A Create 3D digital	Updated to meet Standards for	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
3D digital animations	animations	Training Packages. Performance criteria reworded for clarity.	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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Assessment Requirements for CUAANM302 Create 3D digital animations

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Performance Evidence

Evidence of the ability to:

- interpret design specifications and generate a range of creative ideas and concepts that respond to the brief
- collaborate with others to clarify requirements, discuss ideas, select final design concept and review final animations
- use animation software to create 3D animations that meet requirements of design briefs within production deadlines
- correctly name and store animations in appropriate file formats.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain basic animation techniques and principles
- describe screen, visual design and communication principles as they apply to animations
- outline intellectual property considerations if using images from external sources
- outline work health and safety requirements as they apply to using screens and keyboards for extended periods of time.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in creative arts industry environments. The assessment environment must include access to:

- production documents and briefs
- resources, equipment and software required for 3D animations

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- interaction with others.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational educational and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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CUAANM402 Create digital visual effects

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Application

This unit describes the skills and knowledge required to use a range of industry software applications and material from various sources to create and refine digital visual effects sequences for projects in film, television or digital media productions, including games.

It applies to individuals who combine elements into the final image while retaining the established style and continuity of the project. They work collaboratively with a production team in 3D animation to meet production deadlines.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Visual Communication – Animation and Digital Effects

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Clarify work requirements	1.1 Clarify requirements for digital visual effects with reference to production documentation 1.2 Clarify workflow sequences in consultation with relevant personnel to ensure production deadlines are met 1.3 Select software that best suits the type of production and delivery platform for which visual effects sequences are being created

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Gather and analyse reference material to help with visualisation of final sequences
2. Prepare components	2.1 Gather all assets for integration and check they are in the correct output file format and do not infringe copyright laws 2.2 Choose digital visual effects that best represent the vision of scripts to create optimum visual impact 2.3 Check components comply with storyboard requirements 2.4 Determine appropriate methods and techniques to create required digital visual effects
3. Assemble previsualisations	3.1 Create previsualisation of required visual effects sequences using appropriate assets and compositing techniques 3.2 Adopt safe ergonomic practices when using screens and keyboards for extended periods of time 3.3 Experiment with previsualisation to establish the best results and solve problems that arise during the process of creating the visual effects 3.4 Submit previsualisation visual effects sequences to relevant personnel for evaluation and feedback 3.5 Match elements as required, such as colour, lighting and camera
4. Produce visual effects	4.1 Create final visual effects 4.2 Generate additional required effects to final stage 4.3 Render visual effects to desired format 4.4 Submit visual effects sequences to relevant personnel for evaluation and feedback by agreed deadlines
5. Finalise visual effects	5.1 Respond to feedback by making adjustments to visual effects so they comply with design and production specifications 5.2 Save files to specified storage system accessible to production team 5.3 Make back-up copies of files, and save and store visual effects using appropriate output file formats and standard naming conventions 5.4 Review personal performance and the process of creating digital visual effects for improvement

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 1.4, 2.1-2.3	• Interprets textual and diagrammatic information to identify most efficient and productive approach to the job • Refers to script and storyboard requirements at all times during production
Writing	1.1, 1.2	• Uses clear language to convey project workflow, process improvement opportunities and to complete work related documentation
Oral Communication	1.1, 1.2, 2.4, 3.4, 4.4, 5.1, 5.2	• Clearly states work requirements and listens carefully to discussion and feedback using questions as required
Navigate the world of work	3.2, 5.3	• Follows enterprise procedures when managing files and directories including back-up of files • Follows work health and safety (WHS) requirements
Interact with others	1.1, 1.2, 2.4, 3.4, 4.4, 5.1, 5.2	• Collaborates and cooperates with other personnel to meet production deadlines • Uses appropriate communication practices to seek and respond to feedback from others
Get the work done	1.2-1.4, 2.1-2.4, 3.1-35, 4.1-4.4, 5.1-5.4	• Solves technical and production problems as required • Manages time and priorities to ensure job outcomes meet production requirements • Makes decisions directly related to task requirements • Selects appropriate software for a range of productions and selected delivery platforms

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
CUAANM402 Create digital visual effects	CUFANM402A Create digital visual effects	Updated to meet Standards for Training Packages. Minor edits to clarify performance criteria.	Equivalent unit

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Links

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Assessment Requirements for CUAANM402 Create digital visual effects

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Performance Evidence

Evidence of the ability to:

- create digital visual effects sequences that meet specifications provided in production documents
- select visual effects software appropriate for delivery platform
- assemble previsualisations based on storyboards and scripts to achieve optimum visual impact
- store visual effects in appropriate file formats using industry naming conventions
- work collaboratively with other production personnel to ensure product meets all requirements and production deadlines
- review own performance and the visual effects process for improvement.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline typical challenges of creating visual effects and how to handle these
- explain how effects such as lighting, colour and composition influence visual impact
- explain how the delivery platform impacts the visual effects creation process
- describe compositing methods and techniques as they apply to visual effects creation
- describe the process of rendering visual effects
- outline procedures for checking copyright requirements
- describe the relevant work health and safety standards which relate to working with computers and keyboards.

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Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in creative arts industry environments. The assessment environment must include access to:

- production documents and briefs
- relevant personnel
- visual effects software.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational educational and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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CUACAM201 Assist with a basic camera shoot

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Application

This unit describes the skills and knowledge required to assist with setting up and shooting low-budget, low-end single-camera video productions.

It applies to individuals who work under the direction of a qualified camera operator on pre-production and production tasks, including shooting footage with basic camera equipment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Media and Entertainment Production – Camera/Cinematography

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for camera shoots	1.1 Confirm camera shoot requirements with relevant personnel 1.2 Take location features into account when organising and preparing equipment for shoots 1.3 Check equipment is clean and operational 1.4 Report equipment faults to relevant personnel 1.5 Check sufficiently charged batteries are available to meet production needs

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ELEMENT	PERFORMANCE CRITERIA
	1.6 Select required capture format and ensure sufficient supply for shoots
2. Assist with camera set-up on location	2.1 Use safe handling techniques when lifting camera and other equipment 2.2 Check camera and other equipment is safely secured 2.3 Under direction, assist with positioning camera to achieve required shots 2.4 Safely connect cables and camera to power source as required 2.5 Assist with final check of equipment prior to shoot and report faults to relevant personnel 2.6 Label and load capture media 2.7 Check camera tilt and pan functions
3. Set up lighting	3.1 Mount lighting equipment, following safety guidelines 3.2 Run lighting cables and connect safely to power sources 3.3 Position lights to achieve required effect as directed 3.4 Adjust focus and angles of lights as required 3.5 Install colour frames and gels according to lighting requirements
4. Shoot video	4.1 Adjust and move equipment as required 4.2 Operate clapperboard if needed 4.3 Operate camera according to manufacturer's guidelines and instructions 4.4 Shoot and record sequences as directed 4.5 Time-code recording of takes with descriptions as required
5. Wrap up shoots	5.1 Clean and pack equipment using safe lifting techniques 5.2 Check all equipment is accounted for and report faults to relevant personnel 5.3 Label recordings correctly and complete relevant documentation 5.4 Leave location in original condition and check there are no adverse effects to the site 5.5 Review and reflect on own performance and note areas for improvement

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	4.3	• Recognises and interprets textual information to determine and adhere to requirements
Writing	2.6, 4.4, 4.5, 5.3	• Uses specific and accurate language to interpret and complete production documentation
Numeracy	4.5	• Performs calculations when recording time codes
Oral Communication	1.1, 1.4, 2.3, 2.5, 3.3, 4.1, 4.4, 5.2	• Listens carefully and responds to verbal instructions and creative directions as required • Selects and uses appropriate language to report results and faults
Navigate the world of work	1.3, 2.1, 2.2, 2.4, 3.1, 3.2, 5.1, 5.4	• Takes responsibility for meeting legal and regulatory responsibilities within scope of own role and work context
Interact with others	1.1, 1.4, 2.3, 2.5, 3.3, 4.1, 4.4, 5.2	• Works collaboratively with technical experts to achieve desired results
Get the work done	1.1, 1.2, 1.4-1.6, 2.5-2.7, 3.3-3.5, 4.1-4.3, 5.2	• Plans and organises routine tasks, taking some limited responsibility for decisions regarding sequencing and timing • Prioritises work tasks, meeting deadlines as required • Recognises and responds to predictable routine problems • Seeks assistance when problems are beyond immediate responsibilities or experience

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
CUACAM201 Assist with a basic camera shoot	CUFCAM201A Assist with a basic camera shoot	Updated to meet Standards for Training Packages.	Equivalent unit

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Links

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Assessment Requirements for CUACAM201 Assist with a basic camera shoot

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Performance Evidence

Evidence of the ability to:

- assemble required camera equipment and accessories in readiness for shoots
- connect cabling for equipment to power sources
- assist others with setting up and testing cameras and lighting for basic camera shoots
- follow workplace safety and security procedures
- operate a basic camera to shoot video under direction
- assist with clearing locations and packing equipment at the conclusion of shoots.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe the type of cameras and lighting equipment used in low-end productions
- outline the full range of functions typically found on cameras employed in low-end productions and how they are used
- describe the type of lighting used for shooting low-end productions
- identify key personnel involved in low-end video productions
- describe work health and safety procedures that apply to working under direction on camera shoots.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in creative arts industry environments. The assessment environment must include access to:

- basic camera and lighting equipment

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- a range of locations
- interaction with others.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational educational and training legislation, frameworks and/or standards.

Links

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CUACAM301 Shoot material for screen productions

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Application

This unit describes the skills and knowledge required to shoot material for screen productions using a single-camera unit.

It applies to individuals whose prime responsibility is to capture screen images using a range of video equipment. They generally work under direction, and perform all camera, sound and lighting functions. Depending on the scale of the shoot, they may have an assistant or may be required to assist senior camera operators.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Media and Entertainment Production – Camera/Cinematography

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for shoots	1.1 Participate in pre-production briefings to confirm production and post-production requirements 1.2 Arrange equipment and accessories for shoots as directed, checking everything is clean and operational 1.3 Check there are adequate supplies of charged batteries and capture media for shoots

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Prepare and pack lighting equipment 1.5 Undertake minor repairs on faulty equipment and report significant faults to relevant production personnel 1.6 Confirm location, shooting schedules and timelines 1.7 Complete workplace documentation prior to shoots
2. Set up on location	2.1 Contribute ideas to initial concepts in discussion with crew and talent 2.2 Plan camera positions to ensure composition of shots provides correct visual interpretation of material or subject 2.3 Take safety of personnel on location into account when setting up and securing cameras and other equipment 2.4 Plan repositioning of equipment and accessories during shoots in line with production schedules 2.5 Label and load capture media and check camera functions 2.6 Position microphones and conduct audio check
3. Set up lighting	3.1 Assess quality and quantity of available light to determine whether correction is required 3.2 Mount and position lighting equipment following safety guidelines 3.3 Run lighting cables and connect safely to power sources 3.4 Install colour frames and gels according to requirements 3.5 Select lenses and filters appropriate to prevailing weather conditions
4. Position and operate camera to capture shots	4.1 Use camera shots and angles that produce effective cuts between shots in line with production requirements 4.2 Take account of editing or other post-production requirements while shooting 4.3 Check camera movements to implement planned or rehearsed shots according to direction from production personnel 4.4 Shoot and record sequences as directed, maintaining focus throughout
5. Manipulate cables and camera positioning	5.1 Participate in pre-production meetings and rehearsals to confirm final camera and cable movements 5.2 Position and move camera cabling during shoots according to instructions and cues from production personnel

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ELEMENT	PERFORMANCE CRITERIA
	5.3 Respond consistently to cues from production personnel to avoid undue lapses in timing 5.4 Cooperate with other crew members to move cameras and cabling without impeding work of camera operators 5.5 Handle cabling without damaging equipment or causing injury to others
6. Wrap up shoots	6.1 Use safe lifting techniques when packing equipment and accessories 6.2 Label recorded material and associated documentation correctly 6.3 Report equipment faults and complete required documentation 6.4 Leave locations in original or improved condition 6.5 Review and reflect on own performance and note areas for improvement

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.6, 3.2, 6.2	• Recognises and interprets textual information to determine and adhere to requirements
Writing	1.6, 1.7, 6.2, 6.3, 6.5	• Completes production documentation according to requirements
Oral Communication	1.1, 1.5, 2.1, 4.3, 5.1-5.3, 6.3	• Listens carefully and responds to verbal and non-verbal instructions • Selects and uses appropriate language to report results and faults
Navigate the world of work	1.1, 2.3, 3.2, 3.3, 5.5, 6.1	• Takes responsibility for meeting legal and regulatory responsibilities within scope of own role
Interact with others	1.1, 1.5, 2.1, 5.1, 5.4	• Works collaboratively with technical experts to achieve desired results
Get the work done	1.2-1.6, 2.2, 2.5, 2.6, 3.1, 3.4, 3.5, 4.1-4.4, 5.2-5.4, 6.2-6.5	• Plans, organises and implements routine tasks according to schedules • Follows instructions to complete tasks according to

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		production requirements • Makes decisions directly related to own role • Recognises and responds to predictable routine problems • Seeks assistance when problems are beyond immediate responsibilities or experience

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
CUACAM301 Shoot material for screen productions	CUFCAM301A Shoot material for screen productions	Updated to meet Standards for Training Packages. Minor edits to performance criteria to clarify intent.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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Assessment Requirements for CUACAM301 Shoot material for screen productions

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Performance Evidence

Evidence of the ability to:

- contribute to pre-production discussions about ways to capture desired style of moving images
- assemble equipment and accessories in readiness for camera shoots
- position camera on location so shots are captured from the best angles
- safely set up and test sound equipment, lighting equipment and accessories
- safely operate a range of professional video camera equipment and accessories to capture shots as directed and in a way that facilitates post-production editing
- work within production deadlines
- work effectively as a team member to position equipment before and during shoots and to pack up gear at the conclusion of shoots
- assist with moving cables and cameras during shoots
- follow procedures to complete workplace documentation.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline roles and responsibilities of production and post-production personnel
- identify typical problems that arise in the context of shooting material for screen productions, and briefly describe solutions
- explain how different image capture media are used
- describe basic framing techniques and methods of composition
- describe characteristics of microphones and audio equipment commonly used for shooting screen productions
- outline the effect different light sources, lenses and filters have on lighting sets and talent

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- explain basic principles of lighting that apply in the context of shooting material for screen productions
- describe techniques for handling and attaching cabling
- outline work health and safety procedures that apply to shooting on location.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in creative arts industry environments. The assessment environment must include access to:

- camera, lighting and sound equipment
- locations for shooting video
- productions for which material needs to be filmed
- production documents
- workplace safety and security procedures that apply to shooting video on location
- interaction with others.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational educational and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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CUADIG201 Maintain interactive content

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Application

This unit describes the skills and knowledge required to maintain interactive content for websites, learning resources or social media channels, using a content management system.

It applies to individuals, working under direction, who upload media assets and change text content.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Visual Communication – Digital Content and Imaging

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Check content	1.1 Confirm frequency of content updates and production deadlines with relevant personnel 1.2 Obtain, access and review content to ensure correct versions 1.3 Confirm existing content to be retained or deleted with relevant personnel
2. Check links and media assets	2.1 Check existing links are valid and source replacement links if required 2.2 Check assets are functional and in correct file format and size for

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ELEMENT	PERFORMANCE CRITERIA
	inclusion 2.3 Document technical and content issues in accordance with enterprise procedures 2.4 Confirm with relevant personnel that copyright clearance has been obtained on all new content
3. Update content	3.1 Access content management system to upgrade content 3.2 Adopt safe ergonomic practices when using equipment for long periods of time 3.3 Delete closed links and re-establish new site links if available 3.4 Check internal page links and rectify or delete as required 3.5 Import and/or change content material as required and specify appropriate metadata or tags 3.6 Make heading, typographical, caption and image revisions, applying appropriate style sheets and alt tags if required 3.7 Add pages or screens as required, applying appropriate templates or themes 3.8 Submit edited files to server, and check upload was successful 3.9 Advise relevant personnel if new interface designs are required to incorporate additional materials
4. Test and confirm changes	4.1 Check all content is displayed and functions on server as required 4.2 Confirm with relevant personnel that all changes have been made 4.3 Store original content securely and file using standard industry conventions

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.2, 2.1, 2.3, 3.3-3.7, 4.1, 4.3	• Identifies and follows familiar written instructions • Checks content to ensure styles, links and subject

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		matter are accurate
Writing	2.3, 3.3-3.7, 4.3	• Accurately enters electronic information in required format • Prepares technical documents in required format
Oral Communication	1.1, 1.3, 2.4, 3.9, 4.2	• Uses questioning and listening techniques to clarify requirements • Uses clear, everyday language to discuss tasks with relevant personnel
Navigate the world of work	2.3, 2.4, 3.2	• Adheres to organisational and legislative requirements
Interact with others	1.1, 1.3, 2.4, 3.9, 4.2	• Uses appropriate communication practices to discuss and confirm requirements
Get the work done	1.2, 2.1, 2.2, 3.1, 3.3-3.8, 4.1, 4.3	• Plans and completes work tasks, seeking advice as necessary • Uses relevant software to examine, amend and upload interactive content

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
CUADIG201 Maintain interactive content	CUFDIG201A Maintain interactive content	Updated to meet Standards for Training Packages. Minor edits to performance criteria.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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Assessment Requirements for CUADIG201 Maintain interactive content

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Performance Evidence

Evidence of the ability to:

- maintain interactive content for websites and/or social media channels including:
  - checking links and media assets
  - updating text, media assets and pages
  - assigning correct metadata or tags
  - checking that changes have uploaded successfully
- use a content management system proficiently
- document technical and content issues according to enterprise procedures
- store content according to industry conventions.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain how outdated links impact usability of web pages
- explain the procedure for checking copyright clearance
- describe how metadata and tags are used to classify content
- describe the purpose of alt tags and how they relate to accessibility standards
- explain safe work practices in relation to working on computers for periods of time.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in creative arts industry environments. The assessment environment must include access to:

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- appropriate content
- content management system, the internet and authoring tools.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational educational and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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CUADIG301 Prepare video assets

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Application

This unit describes the skills and knowledge required to prepare video assets for inclusion in interactive media.

It applies to individuals who work in collaboration with others and under supervision to convert video into forms appropriate for streaming, downloading and/or digital media products. In smaller organisations, they may combine this role with video editing, authoring or programming.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Visual Communication – Digital Content and Imaging

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify video assets	1.1 Obtain and assess digital video content as determined by production 1.2 Clarify production schedules and deadlines with relevant personnel 1.3 Identify file format, output purpose, destination and platform of source video according to production requirements 1.4 Discuss, with relevant personnel, required output file format and

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ELEMENT	PERFORMANCE CRITERIA
	codecs for specified bandwidths, and appropriate video encoding software
2. Prepare video assets	2.1 Load video files into appropriate video encoding software 2.2 Check duration and quality of video sequences meet production requirements, and balance and clip sequence if necessary 2.3 Determine and apply appropriate video and audio codecs to meet quality standards 2.4 Batch and optimise video files where possible 2.5 Save files in appropriate output file format using standard industry or enterprise naming conventions 2.6 Follow safe ergonomic practices when using computer equipment for long periods of time
3. Package video assets	3.1 Assign metadata tags if required 3.2 Group files in folder system using standard industry or enterprise naming conventions 3.3 Archive and store in share drive or asset repository for production team access

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.3, 2.2, 2.5, 3.1, 3.2	• Identifies and interprets information in organisational documents • Locates correct folders for storing electronic data • Checks textual information for accuracy
Writing	2.5, 3.1, 3.2	• Writes metadata tags to aid classification of files • Applies standard naming conventions to electronic data
Oral Communication	1.2, 1.4	• Discusses video requirements using industry appropriate language • Uses questioning and listening techniques to clarify requirements

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Numeracy	2.2, 2.3	• Calculates basic bandwidth requirements
Navigate the world of work	2.5, 2.6, 3.2	• Complies with enterprise and legislative requirements
Interact with others	1.2, 1.4	• Uses appropriate communication practices and protocols to confirm requirements with personnel
Get the work done	1.1-1.4, 2.1-2.5, 3.1-3.3	• Plans and completes tasks required to achieve requirements within deadlines • Makes decisions directed related to completion of tasks • Used digital tools to prepare and store video assets

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
CUADIG301 Prepare video assets	CUFDIG301A Prepare video assets	Updated to meet Standards for Training Packages. Performance criteria edited and added.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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Assessment Requirements for CUADIG301 Prepare video assets

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Performance Evidence

Evidence of the ability to:

- prepare video sequences for use in media distribution channels or interactive media products
- use video encoding software to prepare video sequences that meet quality requirements within production deadlines
- save and store files according to industry or enterprise conventions.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline the features of the delivery platforms used to prepare video assets
- explain why video file compression is required
- identify common digital video sources and output formats
- explain appropriate codecs for various platforms and destinations
- describe techniques for saving and preparing digital video output to optimise file size
- explain purposes and procedures for correctly naming and tagging video files
- explain safe work practices in relation to working on computers for periods of time.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in creative arts industry environments. The assessment environment must include access to:

- video encoding and editing software and equipment
- manuals and instructions.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational educational and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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CUADIG302 Author interactive sequences

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Application

This unit describes the skills and knowledge required to use an authoring tool to produce discrete interactive sequences for websites.

It applies to individuals working collaboratively with technical assistance and under direction, who develop small components such as web pages or a sequence of screens, which are integrated into a larger project.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Visual Communication – Digital Content and Imaging

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan use of authoring tool	1.1 Identify a range of appropriate authoring software and discuss their application to various delivery platforms with relevant people 1.2 Clarify design specifications of the project and deadlines with relevant people 1.3 Discuss with relevant personnel the technical requirements of the project and select appropriate authoring software
2. Prepare to author	2.1 Load selected authoring software, create a new file in website

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ELEMENT	PERFORMANCE CRITERIA
sequence	directory for specified task and name using standard industry naming conventions 2.2 Source and assemble all media assets and text content, and check compliance with copyright conditions 2.3 Display and use tools and features of authoring software 2.4 Adopt safe ergonomic practices when using screens and keyboards for extended periods of time
3. Produce interactive sequences	3.1 Produce screen layout according to design specifications applying basic visual design principles and/or templates or themes 3.2 Create interactive media components as required 3.3 Source text content and apply style sheets to format text 3.4 Source relevant media assets, optimise if required, and integrate using appropriate file formats 3.5 Link all components according to production storyboard 3.6 Manipulate HTML mark-up code where errors are occurring or to refine sequence functionality 3.7 Apply features to optimise accessibility 3.8 Save file to website directory structure as components are produced
4. Check functionality of interactive sequence	4.1 Check interactive elements function with minimal error on a variety of devices, operating systems and browsers 4.2 Incorporate changes as required 4.3 Present sequence to relevant people

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	2.1, 2.2, 3.1, 3.3, 3.5, 3.6, 3.8	• Identifies and interprets information in organisational documents • Locates correct folders for storing electronic data • Checks textual information for accuracy

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Writing	2.1, 3.6, 3.8	• Selects the vocabulary and conventions appropriate to text for writing code and naming files
Oral Communication	1.1-1.3, 4.3	• Asks questions and listens carefully to confirm design and technical specifications of the project
Navigate the world of work	2.2, 2.4	• Complies with legislative requirements
Interact with others	1.1-1.3, 4.3	• Uses appropriate communication practices and protocols to confirm requirements and present interactive sequences
Get the work done	1.1-1.3, 2.1-2.3, 3.1-3.8, 4.1, 4.2	• Takes responsibility for planning and producing interactive sequences according to project requirements and design principles • Makes decisions directed related to completion of tasks • Uses digital tools to create, optimise and store interactive sequences

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
CUADIG302 Author interactive sequences	CUFDIG302A Author interactive sequences	Updated to meet Standards for Training Packages. Minor edits to elements and performance criteria to clarify intent.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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Assessment Requirements for CUADIG302 Author interactive sequences

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Performance Evidence

Evidence of the ability to:

- assemble text content, interactive media components and media assets required for a project
- use appropriate software to produce interactive media sequences that meet design and project specifications within deadlines
- apply visual design principles, templates, style sheets and HTML mark-up language to interactive sequences
- check interactive sequence functionality on at least two operating systems, browsers and devices
- save and store files correctly.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- list appropriate file formats for web delivery
- outline when optimisation of media assets is necessary
- explain why application of accessibility standards in the web environment is important
- describe basic visual design principles as they apply to website page layout
- explain safe work practices in relation to working on computers for periods of time
- explain the procedure for checking copyright clearance.

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Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in creative arts industry environments. The assessment environment must include access to:

- text and media assets
- authoring software.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational educational and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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CUADIG303 Produce and prepare photo images

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Application

This unit describes the skills and knowledge required to prepare photo images for integration into an interactive media sequence or product.

It applies to individuals who produce a variety of photo images for production of virtual worlds, from digital still composition to panoramas. They work closely with a programmer or interactive media author and may offer technical advice and support to a team.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Visual Communication – Digital Content and Imaging

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Use scanner to capture photo images	1.1 Source and identify appropriate photographic images according to requirements of photographic project brief 1.2 Discuss selection of images with relevant personnel, and check compliance with copyright conditions 1.3 Assess scanner features to confirm quality outcomes will meet brief requirements 1.4 Operate scanner according to manufacturer’s specifications

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ELEMENT	PERFORMANCE CRITERIA
	1.5 Use appropriate scanner settings to ensure image output meets production requirements 1.6 Transfer and store photographic image files to a computer using standard naming conventions
2. Use digital camera to create photo images	2.1 Clarify photographic project brief with relevant personnel 2.2 Assess digital camera features to ensure outcome will meet requirements of brief 2.3 Plan camera shots, taking into account lighting, framing, composition and other relevant factors 2.4 Load and operate digital camera according to manufacturer's specifications 2.5 Consider digital camera focus, exposure and shutter speed to ensure image capture meets production requirements 2.6 Check photographic images meet brief requirements 2.7 Transfer and store photographic image files to a computer using standard naming conventions
3. Edit photo images	3.1 Load digital imaging software and import photo image source files 3.2 Adopt safe ergonomic practices when using screens and keyboards for extended periods of time 3.3 Manipulate and save digital images using designated digital imaging software 3.4 Create photo images that incorporate visual design and communication principles 3.5 Evaluate outcome for visual impact, effectiveness and fitness for purpose 3.6 Confirm images meet project requirements with relevant personnel
4. Prepare photo image assets	4.1 Save files in appropriate output format to meet platform requirements 4.2 Assign metadata tags if required 4.3 Group files logically in a folder system using standard naming conventions 4.4 Store files in share drive or repository for production team access

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.4-1.6, 2.4-2.7, 4.1, 4.3	• Interprets textual information to follow equipment operation and project requirements
Writing	1.6, 2.7, 4.1-4.3	• Selects the vocabulary and conventions appropriate to text for naming files
Oral Communication	1.2, 2.1, 3.6	• Uses listening and questioning techniques to discuss project brief and to confirm outcomes • Uses descriptive and technical language to participate in oral exchanges
Navigate the world of work	1.2, 3.2	• Complies with legislative requirements
Interact with others	1.2, 2.1, 3.6	• Uses appropriate communication practices and protocols to confirm requirements and present images
Get the work done	1.1, 1.3-1.6, 2.2-2.7, 3.1, 3.3-3.6, 4.1-4.4	• Takes responsibility for logically planning and producing photo images according to design briefs and visual design principles • Makes decisions directly related to task completion • Utilises a range of features within digital cameras, scanners and digital imaging software to create and store photo images

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
CUADIG303 Produce and prepare photo images	CUFDIG303A Produce and prepare photo images	Updated to meet Standards for Training Packages. Minor edits to performance criteria.	Equivalent unit

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Links

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Assessment Requirements for CUADIG303 Produce and prepare photo images

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Performance Evidence

Evidence of the ability to:

- use a scanner and digital camera to capture images that satisfy project briefs
- use digital imaging software and techniques, design and communication principles to produce images that meet project requirements
- save and store files according to requirements.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe the features of a digital camera that are essential for creating images to the required standard
- outline the basic techniques used to compose camera shots
- explain how visual design and communication principles are are relevant to photography
- explain safe work practices in relation to working on computers for periods of time
- explain the procedure for checking copyright clearance.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in creative arts industry environments. The assessment environment must include access to:

- a scanner and digital camera
- digital imaging software
- project briefs
- information or manuals about operating equipment.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational educational and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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CUADIG304 Create visual design components

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Application

This unit describes the skills and knowledge required to create visual designs for interactive media components that can be integrated into a range of media products.

It applies to individuals who generate and assess ideas to create visual design components in response to specifications under supervision in a team environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Visual Communication – Digital Content and Imaging

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Clarify work requirements	1.1 Clarify visual design components required in the project brief, in consultation with relevant personnel 1.2 Identify project timelines and discuss factors that may determine or affect visual design concepts 1.3 Clarify, in discussion with relevant personnel, the target user or audience, and determine format and delivery platform
2. Generate and assess ideas	2.1 Research media products, designs, images, artwork and other creative sources that may inspire visual design ideas

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Develop a range of visual design ideas that are technically feasible, respond to project specifications and provide creative solutions to design issues 2.3 Present and review visual design ideas with relevant personnel
3. Develop design concept	3.1 Experiment with traditional and digital methods to create required visual design components 3.2 Explore a range of typographical and visual design elements to create components 3.3 Evaluate initial design ideas with relevant personnel to select final design concept 3.4 Confirm design concept complies with copyright laws 3.5 Check output format meets delivery platform requirements 3.6 Adopt safe ergonomic practices when using equipment for long periods of time
4. Produce components	4.1 Develop components based on the final design concept using various design techniques 4.2 Apply visual design principles and communication principles to produce components that have high visual impact 4.3 Save components in an appropriate format according to project specifications
5. Finalise visual design components	5.1 Review visual design components against design and technical specifications 5.2 Discuss and confirm additional requirements or modifications with relevant personnel, and make amendments as required 5.3 Save and archive visual design components using industry or enterprise naming conventions and version control protocols

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	2.1, 3.1, 3.2, 3.3,	• Reviews and researches creative source material to generate ideas

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	4.1, 4.3, 5.1, 5.2, 5.3	• Checks that output meets requirements • Locates correct folders for storing electronic data
Writing	2.2, 3.1, 3.2, 4.1, 4.3, 5.2, 5.3	• Prepares information to accompany design components • Names files according to requirements
Oral Communication	1.1-1.3, 2.3, 3.3, 4.3, 5.2	• Participates effectively in spoken interactions using active listening and questioning to confirm and clarify understanding
Navigate the world of work	3.4, 3.6	• Complies with legislative requirements
Interact with others	1.1-1.3, 2.3, 3.3, 4.3, 5.2	• Collaborates with relevant personnel to ensure that end result meets requirements
Get the work done	1.1-1.3, 2.1-2.3, 3.1-3.3, 3.5, 4.2, 4.3, 5.1-5.	• Takes responsibility for planning and producing design components according to project requirements and design principles • Makes decisions directed related to completion of tasks • Uses experimentation to develop new or innovative design approaches • Selects and uses appropriate software to conceive, produce, store and present visual design components

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
CUADIG304 Create visual design components	CUFDIG304A Create visual design components	Updated to meet Standards for Training Packages. Minor edits to elements and performance criteria.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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Assessment Requirements for CUADIG304 Create visual design components

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Performance Evidence

Evidence of the ability to:

- explore and experiment with design techniques and visual design and communication principles to produce ideas and concepts for visual design components
- use design techniques to create visual design components that respond effectively to a project brief
- present and discuss ideas, concepts and designs with relevant personnel
- save and archive files using standard industry or enterprise naming conventions.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe differences between traditional and digital methods in creating visual images, and advantages and disadvantages of each
- describe visual design, typographic and communication principles used to construct visual design components
- explain safe work practices in relation to working on computers for periods of time
- explain the procedure for checking copyright clearance.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in creative arts industry environments. The assessment environment must include access to:

- project briefs
- relevant software

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- manuals and information to support software.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational educational and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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CUADIG401 Author interactive media

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Application

This unit describes the skills and knowledge required to author a complete interactive media product, for example, an entire website.

It applies to individuals who apply sound knowledge of mark-up and scripting languages to develop templates, themes styles sheets, forms and form objects for programmers and the technical support team. They may also use a variety of authoring software used to produce complex interactions such as digital simulations, games and puzzles. They work primarily on client-side technologies.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Visual Communication – Digital Content and Imaging

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify multimedia elements	1.1 Assess design specifications to determine technical and creative objectives of the project 1.2 Locate and assess content required for production 1.3 Discuss issues of integration and formats of media assets with relevant personnel, and confirm production timelines 1.4 Determine, with relevant personnel, an interactive sequence to

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ELEMENT	PERFORMANCE CRITERIA
	become the prototype
2. Identify scope of authoring software	2.1 Identify a range of industry-standard authoring software and assess in relation to specified delivery platform 2.2 Discuss suitability of authoring software to meet specified outcomes with relevant personnel 2.3 Select authoring software to meet production requirements
3. Use authoring software	3.1 Load authoring software and create a file directory structure for the specified task and name using standard industry or enterprise naming conventions 3.2 Display and use tools and features of authoring software relevant to the authoring process 3.3 Adopt safe ergonomic practices when using screens and keyboards for extended periods of time.
4. Create interactive sequence	4.1 Slice and reassemble the user interface appropriate to the authoring software 4.2 Import and assemble components in appropriate sequence according to creative requirements 4.3 Create interactive features according to creative and technical requirements, sourcing and writing appropriate mark-up and scripting languages as required 4.4 Check that interactive sequence conforms to navigation design 4.5 Integrate media assets to optimum levels of technical performance 4.6 Check interactive sequence conforms to loading specifications 4.7 Test for interoperability and accessibility, eliminate all bugs and validate scripting 4.8 Present interactive sequence as a prototype ensuring sequence meets creative, production and technical requirements 4.9 Save output file formats and identify for specified purpose
5. Evaluate interactive prototype	5.1 Present prototype to relevant personnel 5.2 Evaluate prototype against design specifications, including achievement of a creative and user-centred product 5.3 Discuss and agree on any required changes and make adjustments to prototype 5.4 Assist in user testing as required

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ELEMENT	PERFORMANCE CRITERIA
	5.5 Evaluate feedback from user testing 5.6 Seek confirmation from relevant personnel to transform prototype into final product
6. Finalise interactive media product	6.1 Make necessary changes as indicated by user testing 6.2 Replicate prototype functionality to complete the interactive product 6.3 Make final checks to ensure sequences conform to design specifications 6.4 Test for interoperability and accessibility, eliminate bugs and validate scripting 6.5 Save to specified storage system accessible to production team 6.6 Assist in loading product to specified platform as required

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 3.1, 4.2-4.4, 4.6-4.9, 5.2, 5.5, 6.1, 6.3, 6.4, 6.5	• Selects and applies a range of reading strategies to interpret design and technical requirements • Reviews and interprets feedback from user trials to enable completion of final product • Validates scripting to ensure accurate operation of interactive media • Locates correct folders for logical storing of electronic data to assist with production
Writing	3.1, 4.3, 4.9, 6.5	• Creates a range of texts incorporating specific scripting language, mark-up and standard file naming conventions
Oral Communication	1.3, 1.4, 2.2, 4.8, 5.1-5.6	• Uses clear language, questioning and listening techniques to specify and discuss interactive prototypes and final product
Navigate the world of work	3.3	• Complies with legislative responsibilities
Interact with	1.3,1.4, 2.2, 4.8,	• Uses appropriate communication practices and

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others	5.1-5.6	protocols to confirm requirements and present prototypes to a range of personnel
Get the work done	1.1-1.4, 2.1-2.3, 3.1, 3.2, 4.1-4.9, 5.1-5.6, 6.1-6.6	• Takes responsibility for managing a range of tasks concurrently to produce an interactive prototype and final product which meets creative, production and technical requirements • Applies evaluation and diagnostic tests to identify necessary adjustments • Uses authoring and graphics software to create, test, evaluate and adjust interactive prototypes • Identifies, saves and stores final prototypes in digital format

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
CUADIG401 Author interactive media	CUFDIG401A Author interactive media	Updated to meet Standards for Training Packages. Minor edits to elements and performance criteria to clarify intent.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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Assessment Requirements for CUADIG401 Author interactive media

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Performance Evidence

Evidence of the ability to:

- discuss and determine requirements for an interactive media product
- use authoring software to create logical file directory structures and build a prototype of an interactive media product
- evaluate and incorporate feedback from user testing to the prototype
- use authoring software to develop a fully functional interactive media product that:
  - conforms to design and creative requirements specifications
  - meets accessibility and interoperability standards.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain technical requirements for integrating media assets (video, audio, animation, images) for use on a range of delivery platforms
- describe interoperability and accessibility standards used in interactive media product design
- explain the purpose and process of script validation
- outline basic health and safety requirements when working on computers and keyboards.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in creative arts industry environments. The assessment environment must include access to:

- design specifications

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- sample content including a range of media assets
- authoring software
- software manuals and other relevant information.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational educational and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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CUADIG502 Design digital applications

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Application

This unit describes the skills and knowledge required to design digital applications, which may consist of one or many technologies integrated in various combinations.

It applies to individuals who work with clients to design specifications for digital applications, which are then built by other specialised team members. Digital applications may be operated in a web or mobile device environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Visual Communication – Digital Content and Imaging

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine project requirements	1.1 Analyse project brief to identify purpose of, and target audience for, digital applications 1.2 Consult with clients or relevant personnel to clarify project requirements, including project timelines 1.3 Identify target audience characteristics and determine how these influence design 1.4 Identify content and application functions and how these are

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ELEMENT	PERFORMANCE CRITERIA
	accessed, searched and delivered
2. Research digital applications	2.1 Research digital applications and analyse how these meet audience, function and content requirements 2.2 Identify issues relating to delivery platform and technical and industry standards, and determine how these may affect digital application options 2.3 Consult relevant personnel to confirm all digital application options are considered 2.4 Select applications that will meet creative, production and technical requirements
3. Draft design specifications	3.1 Design architecture of digital application to show interrelationship of various components and screens 3.2 Specify interactive features, functionality and navigation 3.3 Identify content and data displays, and specify how these will be logically structured and integrated into and/or generated in the digital application 3.4 Specify levels of access permissions as required 3.5 Specify media assets as required 3.6 Specify user interfaces, taking screen sizes into account 3.7 Specify report generation if required 3.8 Specify production requirements, including appropriate testing strategies 3.9 Produce draft design specifications and instructions for design and development teams to use
4. Review and confirm design specifications	4.1 Use a range of techniques to present draft design specifications, and discuss with client 4.2 Review designs against creative and technical requirements, and client and audience needs 4.3 Adjust designs as necessary after discussions with relevant personnel 4.4 Clarify ownership of intellectual property to comply with production and organisational requirements 4.5 Confirm, with client, acceptance of design specifications, including deliverables, milestones and timelines

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.3, 1.4, 2.1, 2.2, 3.1-3.9, 4.4	• Selects and applies a range of reading strategies to interpret texts
Writing	3.1-3.9	• Uses text, graphic diagrammatic and visual formats to draft and confirm specifications and instructions
Oral Communication	1.2, 2.3, 4.1, 4.5	• Participates effectively in spoken interactions using language and features appropriate to the audience • Uses questioning and listening strategies to confirm project requirements and elicit relevant feedback
Navigate the world of work	4.4	• Understands and adheres to organisational and legislative requirements
Interact with others	1.2, 2.3, 4.1, 4.5	• Collaborates with others throughout all stages of the design process • Selects and uses appropriate practices and protocols to communicate with a range of audiences
Get the work done	1.1-1.4, 2.1-2.4, 3.1-3.6, 3.8, 3.9, 4.1-4.5	• Takes responsibility for planning, organising and implementing tasks required to complete project, coordinating with others when required • Analyses information to make decisions that affect the entire project • Uses digital tools to specify architecture, navigation and content to meet project brief specifications

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
CUADIG502 Design digital applications	CUFDIG502A Design web environments	Updated to meet Standards for Training Packages. Title changed. Minor edits to performance criteria.	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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Assessment Requirements for CUADIG502 Design digital applications

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Performance Evidence

Evidence of the ability to:

- research digital applications and analyse how they meet audience, function and content requirements
- design specifications for digital applications that:
  - meet client and audience requirements
  - are technically feasible
  - detail all aspects of the application's permissions, search capability, architecture, content, assets, screen designs, functions, reports, production requirements and testing strategies
- present and discuss draft specifications.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain the sequence and interrelationships of stages in the process of designing digital applications
- outline issues relating to technical standards and platform functions that may impact on digital application options
- outline the impact of web standards on the design of digital applications
- describe typical formats and techniques for documenting the design of digital applications
- describe the concept of intellectual property rights and how this is managed in context of digital applications.

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Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in creative arts industry environments. The assessment environment must include access to:

- project briefs on which designs can be based
- sample content.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational educational and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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CUADIG503 Design e-learning resources

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Application

This unit describes the skills and knowledge required to develop the design of e-learning resources in consultation with clients.

It applies to individuals who work in education or training organisations, or in media production companies that specialise in the development of e-learning resources.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Visual Communication – Digital Content and Imaging

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify project requirements	1.1 Refer to project briefs to identify target learner characteristics and their impact on resource design 1.2 Identify content to be incorporated, generated and managed, and how content is accessed or delivered 1.3 Identify delivery platforms including learning management systems, and assess implications for media asset formats and content modification 1.4 Consult with clients to clarify project requirements

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ELEMENT	PERFORMANCE CRITERIA
2. Research and select instructional design model	2.1 Analyse content to establish learning outcomes and assessment strategies 2.2 Research a range of instructional design models and consider their suitability to meet briefs 2.3 Identify accessibility and technical standards that may apply for the delivery platforms 2.4 Identify learning styles of target audience and consider how these may impact design 2.5 Evaluate a range of interactive learning and assessment activities to meet learning needs of target learners 2.6 In consultation with relevant personnel, select the instructional design model that best meets learning needs and project requirements
3. Draft design specifications	3.1 Use selected instructional design model to design architecture of the e-learning resource 3.2 Design sequences and interactivity based on content and project requirements 3.3 Develop content templates for content experts if required 3.4 Specify media assets as required 3.5 Specify communication and collaboration tools as required 3.6 Specify user interface of the e-learning resource 3.7 Specify production requirements, including appropriate testing strategies 3.8 Produce design specifications and instructions for design and development teams to use
4. Finalise design specifications	4.1 Present design specifications and discuss with clients 4.2 Review designs against required project outcomes and target learner needs 4.3 Review designs against creative and technical requirements 4.4 Adjust designs as necessary after discussions with relevant personnel 4.5 Clarify ownership of intellectual property to comply with production and organisational requirements 4.6 Confirm with clients their acceptance of design specifications, including deliverables, milestones and timelines

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.3, 2.1-2.5, 3.2-3.8, 4.2-4.5	• Identifies and interprets relevant information including applicable legislation and organisational requirements • Integrates technical and descriptive information and ideas from a range of sources • Interprets project briefs to inform the process of designing e-learning resources
Writing	2.1, 3.1-3.8, 4.4	• Uses text, diagrammatic and graphic formats to draft and confirm requirements and specifications
Oral Communication	1,4, 2.6, 4.1, 4.6	• Participates effectively in spoken interactions using language and features appropriate to the audience • Uses questioning and listening strategies to confirm project requirements and elicit relevant feedback
Navigate the world of work	4.5	• Understands and adheres to organisational and legislative requirements
Interact with others	1,4, 2.6, 4.1, 4.6	• Collaborates with others throughout all stages of the design process • Selects and uses appropriate practices and protocols to communicate with a range of audiences
Get the work done	1.1-1.3, 2.1-2.6, 3.1-3.7, 4.2-4.6	• Adopts a methodical and logical approach to planning, organising and implementing tasks required to meet requirements • Generates complex creative ideas in alignment with the design brief • Takes responsibility for analysing information and making decisions to ensure designs meet all requirements • Uses digital tools to assist with the design of e-learning resources

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
CUADIG503 Design e-learning resources	CUFDIG503A Design e-learning resources	Updated to meet Standards for Training Packages. Minor edits to performance criteria.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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Assessment Requirements for CUADIG503 Design e-learning resources

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Performance Evidence

Evidence of the ability to:

- research and select suitable instructional design models to meet project requirements
- design specifications for e-learning resources for delivery on different platforms that:
  - meet the project brief, including learner requirements
  - are technically feasible
  - detail all aspects of e-learning resource architecture, interactive learning and assessment activities, media assets, communication and collaboration tools, user interface production requirements and testing strategies
- present and discuss design specifications.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- list and briefly describe instructional design learning models for e-learning
- outline target learner characteristics and how these may impact on instructional design choices
- list a range of e-learning delivery platforms, and briefly describe any particular design requirements
- outline typical media assets used for e-learning
- describe common formats and techniques for documenting design of e-learning resources
- outline the impact of web standards on the design of e-learning resources
- describe the concept of intellectual property rights and how this is managed in the context of e-learning resource development.

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Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in creative arts industry environments. The assessment environment must include access to:

- project briefs on which designs can be based
- sample content.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational educational and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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CUADIG507 Design digital simulations

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Application

This unit describes the skills and knowledge required to design digital simulations of real world environments and processes.

It applies to individuals who work closely with subject experts to develop virtual environments for fields including architecture, science and engineering, medicine, conservation and manufacturing. They may also collaborate with programmers and software authors so the simulation is technically achievable.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Visual Communication – Digital Content and Imaging

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify project requirements	1.1 Confirm objectives and outcomes of project briefs in consultation with relevant personnel 1.2 Confirm target audience and determine format and delivery platform of simulations in discussion with relevant personnel
2. Research and plan approach	2.1 Investigate the real world environment to be simulated, to inform algorithms, rules, laws, physical and mathematical formulas that

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ELEMENT	PERFORMANCE CRITERIA
	may be required 2.2 Evaluate designs, plans and other information relevant to the project brief that may assist in modelling the real world environment 2.3 Determine performance objectives, task complexity and user skill levels 2.4 Determine the required depth of physical and functional fidelity, taking into account production requirements 2.5 Research and suggest appropriate simulation authoring tools 2.6 Collaborate with relevant personnel and discuss ideas and creative solutions
3. Draft simulation design documents	3.1 Identify processes that determine the functional behaviour of the simulation and specify how this behaviour is to be represented by control objects 3.2 Define the underlying functionality in a model that specifies essential settings, states, conditions and parameters 3.3 Specify user interface controls that enable users to interact with simulations 3.4 Identify critical impacts, alerts or costs for incorrect user operation 3.5 Specify positive and negative feedback to user responses when interacting with simulations 3.6 Specify sequencing of difficulty levels, if required 3.7 Confirm proposed simulation is technically achievable, in consultation with relevant personnel 3.8 Present clear and detailed draft simulation design specifications in a format that can be used for discussion with and feedback from other team members
4. Finalise simulation design documents	4.1 Review designs against required project outcomes and performance objectives 4.2 Review designs against creative, technical and intellectual property requirements 4.3 Adjust design specifications as necessary after discussions with relevant personnel 4.4 Archive user interface controls for other projects

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	2.1, 2.2, 2.4, 2.5, 3.1-3.6, 4.1-4.3	• Interprets and comprehends a range of familiar and unfamiliar technical, descriptive, and legal textual information • Integrates prior knowledge with new technical research and feedback from relevant personnel
Writing	2.1, 2.3, 2.4, 3.1-3.6, 3.8, 4.1-4.3	• Documents information using correct formatting procedures, and uses appropriate, specialised vocabulary when drafting design documents • Accurately incorporates modifications and user feedback in specification documentation
Oral Communication	1.1, 1.2, 2.6, 3.7, 4.3	• Participates effectively in spoken interactions using language and features appropriate to the audience • Uses questioning and listening strategies to confirm project requirements and elicit relevant feedback
Navigate the world of work	4.2	• Understands legislative requirements related to intellectual property
Interact with others	1.1, 1.2, 2.6, 3.7, 4.3	• Works collaboratively with production personnel throughout all stages of project • Selects and uses appropriate practices and protocols to communicate with a range of audiences
Get the work done	1.1, 1.2, 2.1-2.6, 3.1-3.7, 4.1-4.4	• Coordinates and plans tasks, taking responsibility for ensuring that project is continually assessed and evaluated to meet project requirements • Generates and continually evaluates ideas for the design, ensuring design integrity is maintained • Makes decisions that impact on the entire project • Uses digital tools to assist with design tasks

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
CUADIG507 Design	CUFDIG507A	Updated to meet	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
digital simulations	Design digital simulations	Standards for Training Packages. Minor edits to performance criteria.	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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Assessment Requirements for CUADIG507 Design digital simulations

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Performance Evidence

Evidence of the ability to:

- research and generate a range of ideas for simulations that meet the project brief and target audience
- develop draft design specifications for digital simulations that are clear, detailed and technically feasible
- review and seek feedback from relevant personnel and produce final design specifications.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe typical formats and documentation for presenting simulation designs
- outline a range of authoring tools used for digital simulations
- describe the ways in which algorithms, laws, rules and mathematical formulas can represent real world processes
- outline intellectual property rights and how these are managed in design of digital simulations.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in creative arts industry environments. The assessment environment must include access to:

- briefs for digital simulations on which designs can be based
- facilities and resources to develop design simulations.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational educational and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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CUAPHI504 Employ specialised imaging technologies

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Application

This unit describes the skills and knowledge required to investigate specialised imaging technologies and their application in photo imaging practice.

It applies to individuals who create innovative images using specialised imaging technologies. They may be engaged in scientific, forensic, geographical, exploratory and other industry areas. At this level work is usually carried out independently, with supervision or guidance available as required.

No licensing, legislative or certification conditions apply to this unit at the time of publication.

Unit Sector

Visual communication – photo imaging

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Research range of specialised imaging technologies	1.1 Investigate historic, contemporary and emerging specialised imaging technologies using reliable information sources 1.2 Examine relevant photo imaging discipline, subject matter and themes, and identify their specialist imaging technologies 1.3 Analyse connection between imaging technology and visual representation, attributes and opportunities of an image's subject matter

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Evaluate specialised imaging technologies and their corresponding imaging workflow
2. Test and evaluate attributes of specialised imaging technologies	2.1 Arrange access to specialised imaging technologies in cooperation with imaging specialists and suppliers, where applicable 2.2 Use specialised imaging technologies following work health and safety procedures 2.3 Apply specialised imaging techniques and workflow to create test images 2.4 Review own performance in creation of test images
3. Create body of work using specialised imaging technologies	3.1 Select relevant specialised imaging technology to create innovative body of work with specific subject matter or theme 3.2 Develop concepts to guide creative vision using specialised imaging technology and techniques 3.3 Review and adapt imaging techniques to ensure consistency of creative vision across body of work 3.4 Plan, prepare and organise body of work for presentation using appropriate technology and space 3.5 Document work processes using specialised imaging technology and archive imaging products according to industry standards 3.6 Evaluate personal performance in creation of body of work and identify concepts for further research

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 2.2	• Interprets and evaluates complex technical information and regulatory safety requirements to inform work practice
Writing	1.1, 2.1, 3.4, 3.5	• Uses clear language and technical terminology to complete comprehensive workplace documentation
Oral Communication	1.1, 2.1	• Elicits information from industry sources using effective listening and open questioning techniques

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Navigate the world of work	2.2, 3.5	• Meets workplace expectations to follow work health and safety procedures and industry standards when undertaking and archiving work
Get the work done	1.2-1.4, 2.1, 2.3, 2.4, 3.1-3.4, 3.6	• Plans, organises and undertakes tasks required to familiarise self with imaging technologies • Makes informed decisions about techniques, processes and presentation requirements • Evaluates outcomes of decisions and identifies opportunities for further research • Investigates and analyses the application, operation and potential of specialised technologies in photo imaging contexts

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
CUAPHI504 Employ specialised imaging technologies	CUVPHI519A Investigate and exploit innovative imaging options	Updated to meet Standards for Training Packages. Title changed. Minor edits to elements and performance criteria.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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Assessment Requirements for CUAPHI504 Employ specialised imaging technologies

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Performance Evidence

Evidence of the ability to:

- create a body of photo images experimenting with, and applying, specialised imaging technologies around a specific theme or subject matter
- document specialised imaging processes for use in future contexts
- evaluate own performance for improvement.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe a range of specialised imaging technologies, their attributes and their applications
- outline the history of the development of photo imaging technologies
- explain the opportunities offered by imaging technology to represent the subject matter in different ways
- explain the health and safety considerations associated with imaging technology.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in creative arts industry environments. The assessment environment must include access to:

- specialised image technologies
- sources of information on historical and contemporary imaging technology and techniques.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational educational and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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CUAPOS201 Perform basic vision and sound editing

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Application

This unit describes the skills and knowledge required to perform basic editing functions for screen productions.

It applies to individuals responsible for digitising, cutting and logging pre-recorded image and audio content under the direction of an experienced editor. Within clearly defined parameters, they also edit content using the basic functions of editing software.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Media and entertainment production – post-production

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare source materials for edit	1.1 Clarify technical and creative requirements for online editing in consultation with production personnel 1.2 Obtain and label source materials 1.3 Organise transfer of source materials to appropriate medium as required 1.4 Check sufficient storage and memory is available to meet content resolution requirements

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ELEMENT	PERFORMANCE CRITERIA
	1.5 Assess source materials for technical and creative quality and arrange for remedial action where problems are identified 1.6 Capture content to specified formats and burn time code where applicable, checking format is compatible with available software and hardware 1.7 Align, synchronise and organise uncut images and sound in preparation for evaluation and editing 1.8 In consultation with relevant production personnel, finalise list of required shots and the method for logging them
2. Prepare for editing	2.1 Check editing facilities are operational and arrange for faults or problems to be resolved according to enterprise procedures 2.2 Load source materials onto appropriate editing facility, checking correct image and sound are ready for use and that images and sound are synchronised or aligned accurately 2.3 Identify and catalogue required shots and sequences from source materials in the agreed way 2.4 Log selected edits with reference to time codes and shot descriptions according to enterprise procedures 2.5 Use a batch digitise list to digitise selected sequences according to relevant documentation and consistent with technical and creative requirements 2.6 Create edit decision lists (EDLs) according to instructions from relevant production personnel 2.7 Organise and save selected materials according to overall editing requirements 2.8 Finalise logging sheets and submit EDLs to relevant production personnel by the agreed deadline
3. Perform basic edits	3.1 Use software functions to assemble sequences according to EDLs 3.2 Observe health and safety procedures when working at computers for long periods of time 3.3 Review edited sequences to evaluate quality and content and to identify problems 3.4 Manipulate the editing software to solve identified problems and seek expert advice if required 3.5 Submit sequences to relevant production personnel for feedback by agreed deadlines

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ELEMENT	PERFORMANCE CRITERIA
	3.6 Amend sequences as required and save in appropriate format 3.7 Check source materials and back-up copies are stored securely and labelled correctly 3.8 Complete required documentation, noting variations and issues from original instructions 3.9 Leave workstation in original or improved condition

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.4, 2.4-2.6, 2.8, 3.2, 3.5,	• Interprets and reviews relevant visual and textual material to determine job requirements
Writing	1.2, 1.8, 2.1, 2.4, 2.5, 2.7, 2.9, 3.6, 3.7	• Uses clear and specialised language to record accurate identification information and report faults • Produces lists, logs, and catalogue information, and updates records to reflect changes in requirements
Oral Communication	1.1, 1.8, 2.1, 3.3, 3.4	• Uses clear and relevant language to provide information • Obtains information and instructions by listening and questioning
Numeracy	1.6, 2.5	• Applies mathematical techniques to implement and record time codes and timings
Navigate the world of work	2.1, 2.5, 3.4	• Accepts responsibility for tasks within the boundaries of own role and seeks assistance as required • Ensures workplace protocols and enterprise procedures are followed in the planning and completion of editing tasks
Interact with others	1.1, 1.8, 2.1, 3.3, 3.4,	• Works in collaboration with others to complete editing tasks • Follows accepted communication methods and practices when receiving instructions, seeking advice and reporting information
Get the work done	1.2-1.7, 2.1-2.4, 2.6-2.9, 3.1-3.3, 3.5,	• Organises and implements routine tasks making limited decisions about sequencing, timing and

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	3.6, 3.8, 3.9	required outcomes and seeks assistance when required • Prepares source materials in logical steps, making routine decisions about storage capability, compatibility and quality standards • Uses main features and functions of digital editing tools and equipment to synchronise sound and vision, catalogue, log and digitise sequences, and saves material according to all requirements • Uses software functions to assemble sequences, resolve technical problems, make required changes and save material appropriately within time constraints

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
CUAPOS201 Perform basic vision and sound editing	CUFPOS201A Perform basic vision and sound editing	Updated to meet Standards for Training Packages. Minor edits to elements and performance criteria.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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Assessment Requirements for CUAPOS201 Perform basic vision and sound editing

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Performance Evidence

Evidence of the ability to:

- transfer and digitise video content
- prepare vision and sound content segments for editing
- log single images, audio grabs and basic sequences according to enterprise procedures
- edit content using basic functions of editing software, within clearly defined parameters
- take direction and respond to feedback from a supervising editor
- follow procedures for completing workplace documentation
- meet work deadlines.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline basic vision and sound editing conventions and techniques
- explain roles of post-production personnel
- outline basic features of digital vision and sound editing software
- describe health and safety procedures that apply to using computers and keyboards.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in creative arts industry environments. The assessment environment must include access to:

- screen content that requires editing
- post-production facilities

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- editing software.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational educational and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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CUAPOS401 Edit screen content for fast turnaround

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Application

This unit describes the skills and knowledge required to use non-linear digital facilities to edit screen content for fast turnaround.

It applies to individuals with a reasonable level of experience who are involved in editing for daily programs such as television news and current affairs. At times they work on more complex programs of a formatted or routine nature, or on the editing of daily rushes for feature films.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Media and entertainment production – post-production

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for edit	1.1 Clarify editing requirements in consultation with production personnel and with reference to documentation as required 1.2 Check operation of editing equipment and software 1.3 Identify and prepare source materials for off-line and online editing

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Assess materials to be edited against required technical and creative criteria in consultation with relevant production personnel 1.5 Agree on replacement material or editing approach to overcome technical problems identified with source material 1.6 Review source materials and visualise the look of the final edited sequences
2. Commence editing process	2.1 Digitise and transfer materials to suitable format, checking compatibility with editing equipment and monitoring capture for sound and image quality 2.2 If time allows, create and edit decision list noting in and out points for each edit 2.3 Maintain accurate documentation of editing instructions for use in all stages of post-production as required 2.4 Prioritise and select materials in terms of their relevance to production requirements 2.5 Arrange and present selected material to retain the intended meaning of words and images 2.6 Consider how other materials could be used to clarify and enhance final edit
3. Assemble vision and sound	3.1 Check technical and creative criteria with relevant production personnel to ensure integrity of edit 3.2 Assemble content in a way that produces coherent images and sound according to standard editing conventions 3.3 Confirm assembled materials meet duration requirements, as well as technical and creative criteria for transmission 3.4 Insert transitions, special effects and additional materials as required 3.5 Make appropriate compromises between content and quality to meet time restrictions
4. Finalise edits	4.1 Review assembled online or off-line edits with relevant production personnel 4.2 Implement changes as required and finalise edit to meet deadlines 4.3 Complete necessary documentation and archive source materials according to enterprise procedures 4.4 Report problems encountered with completing edits to relevant personnel

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ELEMENT	PERFORMANCE CRITERIA
	4.5 Provide information required for successful transmission of edited material 4.6 Evaluate own performance against technical and creative criteria and discuss with colleagues where appropriate

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.6, 3.1	• Interprets production documentation, extracts and analyses relevant information to establish job requirements
Writing	2.2, 2.3, 4.2, 4.3	• Uses clear language and terminology to record lists, relevant information and report faults • Completes documentation using required formats, terminology and conventions specific to industry and enterprise procedures
Oral Communication	1.1, 1.4, 3.1, 3.6, 4.1, 4.4	• Uses clear, specific language to provide information, discuss requirements and solutions • Uses listening and questioning techniques to obtain and confirm information
Navigate the world of work	3.3, 4.1, 4.3, 4.4	• Meets expectations associated with own role and responsibilities for planning and completing work within time constraints and in compliance with enterprise procedures
Interact with others	1.1, 1.4, 3.1, 3.6, 4.1, 4.4	• Collaborates with others to achieve joint outcomes • Selects and uses appropriate communication methods and practices to clarify information, engage in discussions and elicit feedback from others
Get the work done	1.2-1.4, 2.1- 2.6, 3.2-3.6, 4.2, 4.3, 4.5, 4.6	• Plans and sequences content preparation and editing tasks to meet creative and technical criteria and production requirements • Makes decisions about sequencing and the use of other material to preserve and enhance meaning • Uses a range of features and functions of digital editing tools and equipment to assemble sound and vision components

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		• Makes considered editing decisions under some pressure and evaluates their effectiveness in meeting requirements

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
CUAPOS401 Edit screen content for fast turnaround	CUFPOS401A Edit screen content for fast turnaround	Updated to meet Standards for Training Packages. Minor edits to performance criteria.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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Assessment Requirements for CUAPOS401 Edit screen content for fast turnaround

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Performance Evidence

Evidence of the ability to:

- review and prepare materials to be edited
- select and note in and out points of sequences to be used in edits
- produce final edits that bring vision and sound content together in line with production requirements and deadlines
- follow procedures for completing workplace documentation
- work collaboratively with production personnel to produce edited sequences.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline vision and sound editing techniques
- describe features of industry-standard editing software and equipment
- outline roles and responsibilities of post-production personnel
- describe creative and technical elements of screen content that typically need to be edited within short timeframes
- identify typical problems with editing vision and sound content for fast turnaround, and briefly describe solutions.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in creative arts industry environments. The assessment environment must include access to:

- vision and sound content to be edited

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- editing software and equipment
- production documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational educational and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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CUAPOS402 Manage media assets

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Application

This unit describes the skills and knowledge required to implement systems and processes to manage media assets for screen productions and projects.

It applies to individuals working in large enterprises on projects or productions that require a wide range of media assets. They work directly with the creators of audio, video and graphic assets to ensure the asset management system accommodates their needs. They set up conventions for file naming, sourcing, sorting and storing formal documents and media assets. Though reporting to a producer or manager, they work with a fair degree of autonomy.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Media and entertainment production – post-production

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish procedures for managing content and outputs	1.1 Confirm media asset management requirements with relevant personnel 1.2 Set up file naming system for projects based on standard conventions and protocols 1.3 Source and review storage repository and back-up systems appropriate for projects

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Set up processes to record information required for tracking formal documents and media assets 1.5 Establish conventions for recording progress and locations of media assets 1.6 Develop strategies for tracking and recording media assets 1.7 Brief team members on the media asset management system, including the process for advising personnel of problems encountered as the system is implemented
2. Record documentation and media assets	2.1 Document sources of media assets according to enterprise procedures 2.2 Document progress and details of a range of project outputs 2.3 Maintain records of technical information on work in progress 2.4 Maintain copyright and permissions information 2.5 Track media assets and record information according to established system 2.6 Maintain version control and identify status of interim products, prototypes and other media assets 2.7 Respond to and resolve problems encountered as the system is implemented, seeking specialist assistance as required
3. Finalise projects	3.1 Confirm procedures and schedule for signing-off projects with relevant personnel 3.2 Determine requirements for archiving 3.3 File and index formal documents and scripts according to agreed project or enterprise procedures and timelines 3.4 Archive media assets in established repository system in line with industry practice 3.5 Check relevant personnel have ongoing access to formal documents and media assets developed for projects 3.6 Review effectiveness of the media asset management system and note areas for future improvement

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

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Skill	Performance Criteria	Description
Reading	1.2, 1.3, 2.1, 2.3-2.6, 3.3, 3.4, 3.6	• Interprets texts of varying complexity and extracts information to determine work requirements
Writing	1.2, 1.4-1.6, 2.1-2.6, 3.3, 3.4, 3.6	• Prepares detailed, logically sequenced text to describe procedures and processes required to identify, record, track and file information • Maintains and updates documentation
Oral Communication	1.1, 1.7, 2.7, 3.1	• Uses language to provide information and instructions appropriate to audience and environment • Uses careful listening and questioning techniques to obtain and confirm information
Navigate the world of work	2.1, 3.1, 3.3	• Meets expectations associated with own role, taking responsibility for planning and implementing a media asset management system in line with enterprise processes and procedures and recognised industry practice
Interact with others	1.1, 1.7, 2.7, 3.1	• Collaborates with others to achieve joint outcomes • Selects and uses appropriate communication methods and practices to clarify requirements and provide comprehensive information and support to others about operation of the media asset management system
Get the work done	1.1-1.6, 2.3, 2.4, 2.6, 2.7, 3.1-3.6	• Plans, organises and implements systematic procedures and processes to manage media assets and handles relevant communication • Selects storage and back-up system that meets requirements • Uses system to organise and maintain required information, and tracks project assets to identify and resolve operational problems • Uses digital technologies and systems to organise, enter, update, and track information and assets

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
CUAPOS402 Manage media assets	CUFPOS402A Manage media assets	Updated to meet Standards for	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
		Training Packages. Minor edits to elements and performance criteria.	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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Assessment Requirements for CUAPOS402 Manage media assets

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Performance Evidence

Evidence of the ability to:

- develop processes and systems for the organisation and filing of formal documents and media assets
- use information tracking and repository systems to meet project requirements
- produce and accurately update records
- archive assets from completed projects with suitable ongoing access conditions
- provide clear directions to users of the processes and systems.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline roles and responsibilities of personnel involved in creating and managing media assets for screen and media projects
- explain the relationship between creative aspects of screen and media projects and the process of managing media assets
- identify typical problems with implementing media asset management systems, and briefly describe solutions
- explain the requirements for maintaining copyright and permissions requirements
- describe features of file and resource repository systems.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in creative arts industry environments. The assessment environment must include access to:

- file and resource management systems

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- media assets.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational educational and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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CUAPPM407 Create storyboards

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Application

This unit describes the skills and knowledge required to create and develop storyboards for a broad range of digital content, including video, film, animation and interactive media.

It applies to individuals who break down content, stories or scripts into discrete elements and visualise creative concepts in collaboration with a creative production team. Storyboard artists, designers, producers and information architects can create storyboards, depending on the type and scale of production. In the film and television industry, people creating storyboards work closely with directors.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Media and Entertainment Production – Production Planning and Management

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan storyboards	1.1 Clarify storyboard requirements for productions with reference to scripts and stories, and in consultation with relevant personnel 1.2 Identify factors that affect type of storyboard to be created 1.3 Contribute ideas in pre-production meetings to help refine storyboard requirements 1.4 Research and select suitable amount of storyboard tools for a

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ELEMENT	PERFORMANCE CRITERIA
	given purpose 1.5 Obtain sign-off, from relevant personnel, on the type of storyboard to be created
2. Draft storyboards	2.1 Break down content, scripts and stories into frames using storyboard techniques and appropriate tools, and methods in line with organisational and work health and safety (WHS) procedures 2.2 Specify storyboard elements for each frame, reflecting creative concepts 2.3 Specify the logical linear or non-linear frame sequence, showing the connection between each frame 2.4 Provide descriptions for each frame 2.5 Seek feedback, and assistance as required, on work in progress from relevant personnel, and incorporate ideas and feedback as appropriate 2.6 Check draft storyboards are clear and legible and show sufficient detail for production teams to use
3. Finalise storyboards	3.1 Present draft storyboards to relevant personnel for discussion and feedback 3.2 Refine storyboards as required to incorporate feedback 3.3 Produce final storyboards that present accurate visual interpretations of scripts, stories or text, and meet agreed specifications 3.4 Make back-up copies of storyboards as required according to organisational procedures 3.5 Submit storyboards to relevant personnel by agreed deadlines 3.6 Review the process of creating storyboards and note areas for future improvement

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description

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Reading	1.1, 1.2, 1.4, 3.4	• Interprets a broad range of information in a variety of forms and uses the knowledge gained to determine specifications and key action in script sequence, and to contribute to the development of ideas for storyboards • Analyses and contrasts information to select that which informs own work
Writing	2.1, 2.2, 2.4, 2.6	• Records detail of research and consultation outcomes, drawing on sufficient vocabulary and grammar to convey ideas effectively • Creates legible and clear descriptions to convey information and requirements in sequential order
Oral Communication	1.1, 1.3, 2.5, 3.1	• Presents explanation of own ideas to others, and discusses ideas and solutions, choosing language appropriate to those taking part in the discussion • Facilitates and participates in potentially abstract discussions, using listening and questioning skills to elicit participant views
Navigate the world of work	3.3-3.5	• Meets expectations associated with own role and accepts responsibility for storyboard production to specifications in compliance with organisational procedures and legislative requirements
Interact with others	1.1-1.3, 1.5, 2.5, 3.1	• Collaborates effectively with relevant personnel to achieve understanding and realise joint outcomes • Selects and uses appropriate communication methods and practices to present storyboards, engage in discussions and elicit feedback
Get the work done	1.2, 1.4, 2.1-2.3, 2.6, 3.2-3.4, 3.6	• Plans, sequences and prioritises storyboard tasks with awareness of how they contribute to production goals • Uses analytical processes to make decisions directly related to task • Uses feedback to inform refinement and identifies opportunities to improve storyboard processes

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
CUAPPM407 Create storyboards	CUFPPM404A Create storyboards	Updated to meet Standards for Training Packages. Minor edits to	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
		performance criteria.	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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Assessment Requirements for CUAPPM407 Create storyboards

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Performance Evidence

Evidence of the ability to:

- interpret scripts and specifications
- visualise creative concepts using storyboard techniques and appropriate tools and methods
- produce clear and logical storyboards that break down content, stories and scripts into discrete elements and meet specified requirements
- present storyboards to others for discussion or implementation, and adjust as required in response to feedback.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe roles and responsibilities of different members of the creative team, and how they contribute to the process of visualising and interpreting creative concepts into storyboards
- list and describe typical storyboard tools
- explain the components of storyboards including frames, elements and descriptions
- outline health and safety procedures that apply to creating storyboards and working for periods of time on computers.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in creative arts industry environments. The assessment environment must include access to:

- scripts, stories or texts to serve as the basis for creating storyboards
- storyboard and visualising tools

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- different types of productions requiring storyboards

Assessors of this unit must satisfy the requirements for assessors in applicable vocational educational and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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CUASOU202 Perform basic sound editing

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Application

This unit describes the skills and knowledge required for basic digital sound editing.

It applies to individuals working under supervision who are responsible for preparing, assembling and digitally editing relatively simple sound sequences for media content.

Individuals are expected to contribute to creative outcomes, including selection and acquisition of sound materials.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Media and Entertainment Production – Audio/Sound

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for editing sound	1.1 Clarify production requirements, including creative and technical objectives in consultation with relevant production personnel 1.2 Obtain, label and securely store audio source materials 1.3 Check editing hardware has sufficient capacity to handle digitising and editing processes 1.4 Check editing software is suited to technical requirements and enterprise practices

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ELEMENT	PERFORMANCE CRITERIA
	1.5 Organise additional equipment to minimise interruptions during editing, if required 1.6 Adopt safe ergonomic practices when using screens and keyboards for long periods of time
2. Assemble sequences for editing	2.1 Digitise content in a compatible format for specified platform 2.2 Monitor and optimise quality of digital output and arrange to fix problems where necessary 2.3 Identify sound edit positions and document appropriately 2.4 Log and assess sound sequences and create and save digital back-up copies 2.5 Use safe listening procedures to evaluate and edit audio content to meet technical and creative objectives
3. Edit sound sequences	3.1 Edit audio content and document details of each edited sound sequence according to production requirements 3.2 Generate an appropriate track list to facilitate sound mixing processes 3.3 Chart positions and durations of sound sequences, noting requirements for transitions where applicable 3.4 Apply audio effects and enhancements to maximise creative outcomes as required *3.5* Use editing software to produce sequences and resolve identified problems 3.6 Seek feedback on edits from relevant production personnel and refine as required 3.7 Submit final edits by agreed deadline in accordance with enterprise procedures
4. Finalise sound edits	4.1 Archive and document edited audio files following enterprise procedures 4.2 Report on editing equipment requiring maintenance if required and leave workstation in original or improved condition 4.3 Participate in post-production debriefing sessions as required 4.4 Seek feedback from colleagues and evaluate own creative and technical performance for improvement

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 2.3	• Interprets textual information to determine job requirements
Writing	1.2, 2.4, 3.1-3.3, 4.1	• Records accurate and detailed information in workplace documentation using simple vocabulary and industry terminology
Oral Communication	1.1, 3.6, 4.2, 4.3, 4.4	• Uses clear and relevant language to gather and provide information • Uses listening and questioning techniques to confirm understanding
Navigate the world of work	1.6, 2.4, 3.7, 4.1, 4.2,	• Complies with enterprise procedures and production requirements in preparation and completion of editing tasks to defined deadlines
Interact with others	1.1, 3.6, 4.2, 4.3, 4.4	• Follows accepted communication methods and practices when discussing task requirements and seeking feedback on task progress • Participates in debrief with colleagues to receive feedback on own performance
Get the work done	1.2-1.5, 2.1-2.5, 3.1, 3.2, 3.4-3.6, 4.4	• Plans and implements routine tasks and workload in a methodical sequence with input from others • Makes routine decisions about source materials, equipment capacity and audio formats, and monitors output for problems • Determines the most effective editing techniques for creative impact, and manipulates software to resolve problems • Uses digital tools to prepare sound components, and edit and refine sequences to achieve creative and technical expectations of the production

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
CUASOU202 Perform	CUFSOU204A	Updated to meet	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
basic sound editing	Perform basic sound editing	Standards for Training Packages. Minor edits to performance criteria.	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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Assessment Requirements for CUASOU202 Perform basic sound editing

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Performance Evidence

Evidence of the ability to:

- prepare and edit audio content to meet creative and technical production requirements
- use editing software and equipment proficiently, manipulating and applying effects where required
- digitise audio content in compatible formats
- assess and optimise quality of sound sequences
- accurately mark, log, document and archive edited sequences
- seek feedback from others to improve own technical and creative performance.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe a range of digital formats compatible with various editing processes, platforms and equipment
- outline procedures to log and document edited sequences
- outline typical challenges that arise collecting and organising content for broadcast and publication, and how to handle these
- identify characteristics of sound that can be manipulated to achieve high quality output
- outline work health and safety requirements for working with sound.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in creative arts industry environments. The assessment environment must include access to:

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- audio editing software and equipment
- manuals and instructions to support software and equipment
- audio content.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational educational and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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CUASOU304 Prepare audio assets

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Application

This unit describes the skills and knowledge required to prepare audio assets for inclusion in broadcasting, games and interactive media.

It applies to individuals who prepare and package audio content into formats appropriate for various media distribution channels and interactive products.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Media and Entertainment Production – Audio/Sound

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify audio assets	1.1 Obtain analogue or digital sources of audio and identify the source file formats 1.2 Clarify output purpose, destination and platform 1.3 Discuss with relevant personnel the required output file format and audio codecs for specified bandwidths 1.4 Discuss with relevant personnel the appropriate audio encoding software
2. Prepare audio assets	2.1 Open appropriate audio encoding software and load audio file

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Eliminate or treat defects on sound recordings 2.3 Equalise sound output levels where necessary 2.4 Check duration and quality of audio sequences meet production requirements, and adjust if necessary 2.5 Determine and apply appropriate audio codecs 2.6 Batch optimise audio files where possible 2.7 Save files in appropriate output file format using standard industry or enterprise naming conventions 2.8 Follow safe ergonomic practices when using screens and keyboards for long periods of time
3. Package audio assets	3.1 Assign metadata tags if required 3.2 Group files logically in folder system using standard industry or enterprise naming conventions 3.3 Archive and store in share drive or repository for production team access

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.2, 2.4	• Interprets information to determine standards and job requirements
Writing	2.7, 3.1, 3.2	• Uses clear language and terminology to identify and group files
Oral Communication	1.3, 1.4	• Uses clear language to contribute information • Obtains information by listening and questioning
Numeracy	2.4	• Uses basic calculations to measure time
Navigate the world of work	2.7, 2.8, 3.2, 3.3	• Accepts responsibility for tasks within boundaries of own role • Meets organisational expectations in performance of task
Interact with	1.3, 1.4	• Follows accepted communication methods and

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others		practices in discussions with project team members
Get the work done	1.1, 1.2, 2.1-2.7, 3.2	• Makes decisions about audio asset requirements with guidance from others • Uses digital tools to prepare, refine and package audio assets that meet interactive media requirements

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
CUASOU304 Prepare audio assets	CUFSOU301A Prepare audio assets	Updated to meet Standards for Training Packages. Minor edits to performance criteria.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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Assessment Requirements for CUASOU304 Prepare audio assets

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Performance Evidence

Evidence of the ability to:

- prepare audio content for inclusion in interactive media products and media distribution channels
- use editing software to treat, equalise and clip sound sequences to meet technical standards
- use audio encoding and editing software
- complete file naming and storage according to industry or enterprise conventions.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain the need for audio file compression in media distribution channels and interactive media products
- describe how codecs work to optimise audio outputs and identify appropriate codecs for various platform destinations
- explain techniques to achieve audio equalisation
- explain file compression
- outline procedures for naming and tagging audio files following standard enterprise or industry conventions
- outline work health and safety requirements for working with sound.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in creative arts industry environments. The assessment environment must include access to:

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- audio encoding and editing software and equipment
- manuals and instructions that support encoding and editing software.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational educational and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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CUASOU407 Edit sound

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Application

This unit describes the skills and knowledge required to edit sound material to meet production requirements. This involves assessing the quality of source materials, preparing source materials for sound editing, making technically accurate sound edits, and applying sound effects to enhance the final product.

It applies to individuals who work as part of a production team to edit sound material for a range of productions. It also applies to individuals working in film and sound archives. Individuals work with minimal supervision and guidance, and may supervise others.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Media and entertainment production – audio/sound

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for sound editing	1.1 Discuss production requirements and procedures with relevant people 1.2 Confirm necessary copyright releases have been obtained 1.3 Consider impact of using different release sound formats 1.4 Confirm sound editing software and equipment is operational

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ELEMENT	PERFORMANCE CRITERIA
	and appropriate for production requirements 1.5 Prepare team work plan as required, and brief relevant people accordingly 1.6 Obtain original or copies of sound sources, and assess their quality against production requirements 1.7 Advise relevant people if sound sources do not meet production requirements, and propose options to resolve issues as required 1.8 Anticipate problems that may arise during sound editing, and plan accordingly
2. Edit complex sound sequences	2.1 Confirm format of sound sources is compatible with sound editing software and equipment 2.2 Follow work health and safety (WHS) procedures, and use safe work practices when using sound editing software and equipment 2.3 Listen critically to sound sources to determine extent and range of required edits 2.4 Use sound editing software and equipment to achieve technical and creative production outcomes, and to resolve identified problems 2.5 Collaborate with relevant people to meet production requirements
3. Create overall sound context	3.1 Determine purpose for which sound is being used in production 3.2 Select or produce appropriate sound effects that enhance the purpose, genre and technical/creative outcomes of the production 3.3 Incorporate sound effects and elements to meet creative and production requirements
4. Finalise editing operations	4.1 Listen to final sound mix with relevant people, and make adjustments as necessary 4.2 Save final files in correct format 4.3 Conduct quality check of final sound mix according to production requirements and enterprise procedures 4.4 Archive edited files, and complete relevant documentation according to production requirements and enterprise procedures 4.5 Confirm work environment is cleaned after use and restored to pre-editing condition 4.6 Collaborate with relevant people to organise a sound effect library for future productions

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ELEMENT	PERFORMANCE CRITERIA
	4.7 Provide feedback to production team members as required 4.8 Evaluate own performance and note areas for improvement

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.3, 1.8	• Interprets textual information and applies the knowledge that has been gained to evaluate methodologies and elements according to production requirements
Writing	1.8	• Prepares specific information that conveys an understanding of outcomes and alternatives, and uses terminology appropriate to present to relevant personnel
Oral Communication	1.1, 1.5, 1.7, 2.3, 2.5, 4.1	• Uses industry appropriate language and chooses appropriate strategies to establish clear directions • Derives meaning from a range of audio sources to inform work requirements
Navigate the world of work	1.2, 1.3, 2.2, 4.2-4.5	• Follows required safety procedures • Identifies, confirms and applies copyright requirements relevant to role • Follows organisational protocols and procedures to achieve work outcomes
Interact with others	1.1, 1.5, 1.7, 2.5, 4.1, 4.6, 4.7	• Collaborates with others to achieve joint production outcomes
Get the work done	1.1-1.8, 2.1-2.5, 3.1-3.3, 4.1-4.5	• Plans and prioritises a range of complex tasks, including contingencies to achieve goals efficiently • Uses innovative techniques to organise work and support the creative process • Provides feedback and evaluates options to determine solutions and improvements • Uses problem-solving skills to anticipate and plan for issues • Uses digital equipment and software to manage and backup files

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
CUASOU407 Edit sound	CUSSOU403A Perform advanced sound editing	Updated to meet Standards for Training Packages. Minor edits to performance criteria to clarify intent.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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Assessment Requirements for CUASOU407 Edit sound

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Performance Evidence

Evidence of the ability to:

- edit sound material and create final mix for productions
- incorporate appropriate sound effects into final mix
- work collaboratively as part of a production team within set deadlines
- use the features of a range of industry current sound editing software and equipment in line with production requirements and industry standards.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain the different purposes for which sound is used in productions
- explain the copyright implications that relate to sound editing
- explain the main principles and techniques of sound editing
- explain the issues and challenges that typically arise when editing sound material, and how to address them
- explain the work health and safety (WHS) procedures and principles that relate to sound editing.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in creative arts industry environments. The assessment environment must include access to:

- sound editing software and equipment
- productions where sound editing is required
- production documentation

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- interaction with others.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational educational and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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CUASOU504 Produce sound recordings

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Application

This unit describes the skills and knowledge required to plan, organise and produce audio recordings.

It applies to individuals who work collaboratively and creatively with artists and performers to produce audio recordings for distribution via any media.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Media and entertainment production – audio/sound

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Confirm concept for recording project	1.1 Use knowledge of commercial trends, market niches, new styles and artists to develop the vision and concept for a recording project 1.2 Discuss and confirm vision and concepts with relevant people, and achieve consensus on project outcomes 1.3 Establish and discuss production requirements for recording project with relevant people 1.4 Research copyright requirements to confirm project process and outcomes will comply with legislation

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ELEMENT	PERFORMANCE CRITERIA
2. Confirm arrangements for recording project	2.1 Confirm repertoire, artists, project outcomes and operational details with relevant people 2.2 Confirm project outcomes can be achieved within time and budget constraints 2.3 Plan and agree on communication processes and recording schedule with relevant people 2.4 Draw up and distribute rehearsal and recording schedules to relevant people 2.5 Discuss and confirm appropriate recording locations with relevant people
3. Coordinate and conduct sound recording sessions	3.1 Confirm that sessions are scheduled to allow adequate rehearsal and sound testing prior to main recording sessions 3.2 Confirm recording location, sound equipment and recording format meet production and work health and safety (WHS) requirements 3.3 Assess the acoustic characteristics of the recording location, and provide feedback on instrument/voice placement and settings to relevant people 3.4 Provide balanced, constructive and supportive feedback to artists, to ensure that performance meets project expectations 3.5 Recognise and consider individual perspectives, and negotiate acceptable outcomes to conflicts as required 3.6 Monitor and adjust recording to produce a final product that meets required project outcomes
4. Evaluate recording process and product	4.1 Use appropriate techniques to evaluate the recording process and completed product 4.2 Seek feedback and opinions from relevant people, and document results of evaluation 4.3 Evaluate own role in the recording process, and note areas for improvement 4.4 Use evaluation results to improve future practice

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Learning	4.3, 4.4	• Uses self-evaluation and reflection to identify strategies to build own skills and knowledge
Reading	1.4	• Interprets textual information from relevant sources to identify compliance with policy and procedures
Writing	1.1, 2.3, 2.4, 4.3	• Prepares specific information using terminology and a form appropriate to the task and audience
Oral Communication	1.2, 1.3, 2.1, 2.3, 2.5, 3.3-3.5, 4.2	• Uses industry appropriate language to check understandings and elicit different viewpoints • Participates in a verbal exchange of ideas/solutions, and draws on active listening strategies
Numeracy	2.2, 2.3, 3.1	• Uses mathematical concepts and calculations to estimate and plan project costs and timeframes
Navigate the world of work	1.4, 3.2	• Identifies, confirms and applies legislative requirements relevant to role
Interact with others	1.2, 1.3, 2.1, 2.3, 2.5, 3.3-3.5, 4.2	• Collaborates and works cooperatively to maximise creative objectives • Uses appropriate communication practices to discuss and direct requirements and agree on outcomes • Considers the perspectives of others during planning and production • Anticipates potential for conflict and deals with conflict effectively
Get the work done	1.3, 2.1, 2.3, 2.5, 3.1-3.6, 4.1, 4.3, 4.4	• Plans and priorities a range of tasks, including contingencies to achieve goals efficiently • Identifies innovative approaches that could enhance outcomes • Analyses information to make decisions and solve problems • Evaluates own role to make improvements in the creative process

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
CUASOU504 Produce sound recordings	CUSSOU502A Produce sound recordings	Updated to meet Standards for Training Packages. Minor edits to performance criteria to clarify intent.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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Assessment Requirements for CUASOU504 Produce sound recordings

Modification History

Release	Comments
Release 1	This version first released with CUA Creative Arts and Culture Training Package version 2.0.

Performance Evidence

Evidence of the ability to:

- develop creative sound concepts for recording projects
- work creatively, collaboratively and constructively with others to produce at least two sound recordings for distribution
- adjust recordings to achieve project outcomes
- document the evaluation of the recording process, outcomes and own role.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe the production requirements that may impact decisions about recording projects
- explain the legislative requirements that relate to sound recording
- explain how different recording and performance environments affect sound, and what adjustments can be made to produce required sound recordings
- explain the sound equipment required for a range of recording situations
- describe techniques for evaluating the quality of a sound recording
- explain the issues and challenges that typically arise when producing sound recordings, and how to address them.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in creative arts industry environments. The assessment environment must include access to:

- relevant instruments and equipment

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- scores, charts or other written music resources
- participants, such as performers and technical crew
- appropriate recording facilities with adequate space and acoustic qualities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational educational and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1db201d9-4006-4430-839f-382ef6b803d5

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ICTBWN302 Install optical fibre splitters in fibre distribution hubs

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to install optical fibre splitters in fibre distribution hubs (FDH) as part of a fibre to the premises (FTTP) network.

It applies to individuals who work in teams to deliver very high speed broadband capacity for the National Broadband Network (NBN) initiative.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – broadband and wireless networks

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Set up and prepare for installation	1.1 Obtain relevant legislation, codes, regulations and standards for compliance when conducting work 1.2 Scope work by obtaining project plan from appropriate personnel and arrange for site access to comply with security arrangements 1.3 Notify appropriate personnel of identified safety hazards at worksite

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	1.4 Determine type of FDH enclosure and optical splitter module from project plan, and identify splitter installation requirements using work instructions 1.5 Obtain tools and safety equipment and material to perform tasks safely and efficiently 1.6 Select and use required protective equipment and make site safe and secure for installation work 1.7 Obtain splitter module, visually inspect for splitter module damage and replace if necessary
2. Install splitter module in FDH	2.1 Follow work health and safety (WHS) and environmental requirements, and identify and avoid other services 2.2 Open enclosure and assess suitability of FDH according to project plan 2.3 Locate next available slot in splitter module area of FDH for installation 2.4 Insert splitter module and secure according to manufacturer's specifications 2.5 Inspect installed splitter module and surrounding area for completeness of job
3. Prepare and connect splitter input fibres to feeder cable	3.1 Locate feeder port to be connected and remove protective cover in preparation 3.2 Use optical power meter to verify feeder port is not active 3.3 Clean adaptor and mated connector according to manufacturer's specifications, and route splitter input fibre to correct feeder port 3.4 Remove dust cap and clean end face according to manufacturer's specifications to prevent possible damage from mating contaminated connectors 3.5 Connect input fibre to feeder port and record connection according to organisational policy
4. Connect output fibres and test splitter	4.1 Determine output fibre to be connected and required adapter in distribution field 4.2 Clean adapter and fibre end-face according to manufacturer's specifications 4.3 Route output fibre and connect with adapter in distribution field 4.4 Test operation of optical splitter for optical power levels at operating wavelength division multiplexing (WDM) optical wavelengths 4.5 Record connections, test results and park unused fibre leads for safety reasons according to organisational policy

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5. Clean up work site	5.1 Replace all dust caps on internal enclosures and close FDH 5.2 Remove installation waste and debris from worksite and dispose of according to environmental requirements 5.3 Notify appropriate personnel of job completion and obtain sign off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 1.4, 2.1-2.4, 3.2-3.4, 4.1, 4.2, 4.5	• Reads and interprets specifications and other documentation from a variety of sources and consolidates information to determine requirements
Writing	1.2, 1.3, 3.5, 4.5, 5.3	• Accurately completes relevant reports and documentation using clear and technically specific language and numerical data
Oral Communication	1.2, 1.3, 5.3	• Participates in verbal exchanges with key personnel using appropriate, clear and detailed language to exchange information, ideas or solutions • Uses listening and questioning skills to confirm understanding of requirements
Numeracy	3.2, 3.5, 4.4	• Performs mathematical calculations to check, interpret and confirm results of system tests
Navigate the world of work	1.4, 2.1, 3.5, 4.5, 5.2	• Complies with explicit policies and procedures • Explores and implements where identified the implicit expectations of policies and procedures
Interact with others	1.2, 1.3, 5.3	• Identifies and takes steps to follow accepted communication practices and protocols • Complies with work instructions and contributes to work group discussions using accepted conventions
Get the work done	1.1, 1.4-1.7, 2.2-2.5, 3.1-3.5, 4.1-4.5, 5.1, 5.2	• Plans and implements routine tasks and workload, making limited decisions on sequencing, timing and collaboration, and seeks assistance in setting priorities • Responds to predictable routine problems and implements standard or logical solutions • Uses the main features and functions of digital tools

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		to complete work tasks and access information

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTBWN302 Install optical fibre splitters in fibre distribution hubs	ICTBWN3088B Install optical fibre splitters in fibre distribution hubs	Updated to meet Standards for Training Packages Minor changes to Performance Criteria	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTBWN302 Install optical fibre splitters in fibre distribution hubs

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- comply with all work health and safety (WHS) regulations, standards and work practices
- safely use optical power test equipment
- accurately measure optical signals at two wavelength division multiplexing (WDM) wavelengths
- correctly install splitter in the enclosure
- connect input and out optical fibres to the splitter
- test optical splitter
- complete connection recording.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify the location and summarise the contents of relevant organisational policies and procedures
- discuss WHS risks and control measures when working with optical fibre and equipment
- explain propagation of light in optical communication systems
- outline the role of transmitters and receivers in optical communication systems
- identify and describe the critical aspects of cleaning of connectors
- summarise specific WHS requirements relating to the handling of optical fibre and the use of laser light sources
- explain WDM applications.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – broadband and wireless networks field of work and include access to:

- a fibre distribution hub and relevant optical splitter
- tools, equipment and personal protective equipment currently used in industry
- relevant regulatory and equipment documentation that impacts on work activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTBWN303 Install lead-in module and cable for fibre to the premises

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to install a lead-in module and its associated cable for a fibre to the premises (FTTP) installation. Optical networks and FTTP are part of the strategies by service providers using wavelength division multiplexing (WDM) to deliver very high speed broadband capacity through the access network for the National Broadband Network (NBN) initiative.

It applies to individuals with specialist technical skills who work in teams to provide either underground or aerial services in next generation networks (NGN) using emerging technologies.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Unit Sector

Telecommunications – broadband and wireless networks

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Set up and	1.1 Obtain relevant legislation, codes, regulations and standards for

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prepare for installation	compliance when conducting work 1.2 Scope work by obtaining project plan from appropriate personnel and arrange for site access to comply with security arrangements 1.3 Notify appropriate personnel of identified safety hazards at worksite 1.4 Determine type of lead-in module and cable from project plan and identify installation requirements using work instructions 1.5 Obtain tools and safety equipment and material to perform tasks safely and efficiently 1.6 Select and use required protective equipment and make site safe and secure for installation work 1.7 Obtain lead-in module, visually inspect for lead-in module damage and replace if necessary
2. Install lead-in module in enclosure	2.1 Follow work health and safety (WHS) and environmental requirements for given work, and identify and avoid other services 2.2 Identify position in enclosure to secure module and install mounting bracket according to manufacturer's specifications 2.3 Splice lead-in module tail to distribution joint 2.4 Attach lead-in module to mounting bracket and secure in position
3. Install optical fibre lead-in cable to premises	3.1 Unpack and prepare lead-in cable according to manufacturer's specifications 3.2 Haul optical fibre lead-in cable to premises, observing maximum strain on cable for underground installation 3.3 Coil excess cable length within enclosure 3.4 Install aerial lead-in using catenary and bearer wire to meet relevant height and minimum sag requirements
4. Terminate lead-in cable at premises	4.1 Access optical network termination (ONT) unit to expose lead-in cable to retrieve fibre and connector 4.2 Clean ONT adapter and connector according to manufacturer's specifications 4.3 Mate fibre connector with ONT adapter, ensuring free of contaminants 4.4 Route fibre cable within ONT and secure in position 4.5 Test operation of lead-in at ONT for optical power levels at designated operating WDM optical wavelength 4.6 Record connections, test results and park unused fibre leads for safety reasons according to organisational policy
5. Clean up work site	5.1 Seal ONT and enclosure 5.2 Remove installation waste and debris from worksite and dispose of

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	according to environmental requirements 5.3 Notify appropriate personnel of job completion and obtain sign off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1, 1.2, 1.4, 2.1, 2.2, 2.4, 3.1, 3.3, 3.4, 4.2, 4.5, 4.6	• Reads and interprets plans, specifications and other documentation from a variety of sources and consolidates information to determine requirements
Writing	1.2, 1.3, 3.5, 4.5, 4.6, 5.3	• Accurately completes relevant reports and documentation using clear and technically specific language and numerical data
Oral Communication	1.2, 1.3, 5.3	• Participates in verbal exchanges with key personnel using appropriate, clear and detailed language to exchange information, ideas or solutions • Uses listening and questioning skills to confirm understanding of requirements
Numeracy	3.2, 3.4	• Takes measurements and uses them for work layout and construction • Performs mathematical calculations to check, interpret and confirm results of system tests
Navigate the world of work	1.4, 2.1, 2.2, 3.4, 4.6, 5.2	• Complies with explicit policies and procedures • Explores and implements where identified the implicit expectations of policies and procedures
Interact with others	1.2, 1.3, 5.3	• Uses a limited range of accepted practices for communicating in a work environment • Complies with work instructions and contributes to work group discussions using accepted conventions
Get the work done	1.1, 1.5-1.7, 2.2, 3.2-3.4, 4.1-4.6, 5.1, 5.2	• Plans and implements routine tasks and workload, making limited decisions on sequencing, timing and collaboration, and seeks assistance in setting priorities • Makes low-impact decisions within familiar situations, based on a range of predefined or routine solutions, and evaluates the effectiveness

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		of the outcome • Uses the main features and functions of digital tools to complete work tasks and access information

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTBWN303 Install lead-in module and cable for fibre to the premises	ICTBWN3090B Install lead-in module and cable for fibre to the premises	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTBWN303 Install lead-in module and cable for fibre to the premises

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- safely use optical power test equipment
- accurately measure optical signals at TWO wavelength division multiplexing (WDM) wavelengths
- install lead-in module in the enclosure for both an aerial and an underground installation
- complete connection recording for both lead-ins
- perform and test an optical fibre lead-in to a distribution joint.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline licence requirements for working at heights
- identify the location and summarise the contents of relevant organisational policies and procedures
- discuss personal safety issues
- explain the propagation of light in optical communication systems
- describe the role of transmitters and receivers in optical communication systems
- identify the critical aspects of site engineering
- explain specific WHS requirements relating to the handling of optical fibre and the use of laser light sources
- explain WDM applications.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – broadband and wireless networks field of work and include access to:

- a fibre lead-in module, distribution pit, premises conduit and relevant optical network termination (ONT) unit
- tools, equipment and personal protective equipment currently used in industry
- relevant regulatory and equipment documentation that impacts on work activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL205 Joint metallic conductor cable on customer premises

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0. Minor updates made to Knowledge Evidence.
Release 1	This version released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to joint metallic conductor cable.

It applies to individuals who work in technical roles completing tasks on customer premises in underground situations, pits, jointing enclosures or above ground.

All customer cabling work in the telecommunications, fire, security and data industries must be performed by a registered cabler. All cablers are required to register with an Australian Communications and Media Authority (ACMA) accredited registrar.

Unit Sector

Telecommunications – cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Prepare for jointing	1.1 Arrange access to site according to required procedures 1.2 Inform appropriate personnel of identified hazards on worksite 1.3 Organise tools, equipment and materials for given work 1.4 Review site plans and documentation 1.5 Select cable type and requirements for cable joint

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ELEMENT	PERFORMANCE CRITERIA
2 Joint cable and test joint	2.1 Joint metallic cable following work health and safety (WHS) and environmental requirements and complying with manufacturer's requirements and relevant industry standards 2.2 Perform relevant cable tests to ensure joint complies with site specifications, manufacturer's specifications and relevant legislation, codes, regulations and standards 2.3 Rectify any cable faults 2.4 Make visual inspection of joint to confirm soundness and completeness
3 Complete records and clean up site	3.1 Complete required records and notify customer 3.2 Remove installation waste and debris from worksite and dispose of according to environmental requirements to maintain safe worksite conditions 3.3 Reinstate site according to customer and company requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	• Interprets textual information from relevant sources to identify relevant and key information
Writing	• Uses clear, specific and industry related terminology to complete workplace documentation
Numeracy	• Takes readings and measurements and interprets results
Navigate the world of work	• Complies with explicit policies, procedures and legislative requirements relevant to own role
Interact with others	• Identifies and follows accepted communication practices and protocols when liaising with internal and external personnel on technical and operational matters
Get the work done	• Determines job sequence and works logically and systematically to undertake clearly defined tasks • Analyses task requirements to decide on appropriate equipment and practices

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Unit Mapping Information

ICTCBL205 Joing metallic conductor cable on customer premises supersedes and is equivalent to ICTCBL2016A Joint metallic conductor cable on customer premises

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL205 Joint metallic conductor cable on customer premises

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- organise resources and prepare for the task of jointing
- joint at least one 20 pair (or greater) cable
- test joint
- interpret test results
- rectify cable faults
- check that the enclosure is properly sealed
- comply with all related work health and safety (WHS) requirements and work practices.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- the current Australian Communications and Media Authority (ACMA) Competency Requirements for Telecommunications Cabling Provider Rules, legislation, codes of practice and other formal agreements that impact on the work activity
- features and operating requirements of test equipment
- information required to operate equipment according to a test specification
- manufacturer’s requirements for safe operation of equipment
- specific WHS requirements relating to the activity and site conditions

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- test methods and performance requirements
- typical issues and challenges that occur on site
- purpose, construction and characteristics of cable types
- cable colour screening
- basic telephony, including operation.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- sites where jointing metallic conductor cable may be conducted
- use of joint testing equipment currently used in industry
- relevant regulatory and equipment documentation that impacts on cable jointing and testing activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL211 Install an above ground equipment enclosure

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the, skills and knowledge required to plan, build, install and earth an equipment enclosure for cabling provisioning on or above the ground.

It applies to individuals who work in technical roles in civil construction including the installation of enclosures such as pillars, cabinets, remote integrated multiplexers (RIM) and mobile equipment enclosures for new or upgrade network installations.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to construct and install enclosure	1.1 Obtain construction plan from appropriate personnel to scope work and arrange for site access 1.2 Notify appropriate personnel of identified safety hazards and other services at worksite 1.3 Obtain plant, tools, safety equipment and material to perform tasks safely and efficiently 1.4 Determine location and type of above ground enclosure specified

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ELEMENT	PERFORMANCE CRITERIA
	in construction plan required for project
2. Build enclosure	2.1 Use tools according to enterprise guidelines and work health and safety (WHS) regulations 2.2 Construct footings or foundations to construction design specifications 2.3 Construct enclosure to specifications given in construction design 2.4 Connect enclosure to earth according to construction plan and industry practice
3. Complete project	3.1 Complete reports according to enterprise policy and record alterations to plans using appropriate symbols 3.2 Recover obsolete materials and equipment, and return to appropriate point for disposal 3.3 Restore site according to requirements of enterprise or approving authority and to client satisfaction 3.4 Notify appropriate personnel of job completion and obtain sign off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.4, 2.1-2.4	• Interprets textual information from technical sources to identify relevant and key information
Writing	1.2, 3.1, 3.4	• Documents outcomes and changes to plans using industry relevant terminology and recognised plan symbols
Numeracy	1.4, 2.2, 2.3	• Takes measurements and uses them for work layout and construction • Make basic calculations appropriate for measuring and estimating materials for construction
Navigate the world of work	1.2, 2.1, 3.1, 3.3	• Complies with explicit policies and procedures, and legislative requirements relevant to own role
Interact with others	1.1, 1.2, 3.3, 3.4	• Identifies and follows accepted communication practices and protocols when liaising with clients and

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		internal and external personnel on technical and operational matters
Get the work done	1.1, 1.3, 2.1-2.4, 3.2, 3.3	• Determines job sequence and works logically and systematically to undertake clearly defined tasks • Analyses task requirements to decide on appropriate equipment and practices

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTCBL211 Install an above ground equipment enclosure	ICTCBL2131A Install an above ground equipment enclosure	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL211 Install an above ground equipment enclosure

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- prepare to install an enclosure using construction plans
- use appropriate tools and equipment to construct and connect an enclosure according to plans, specifications, and work health and safety (WHS) requirements
- complete reports and document alterations to plans as appropriate.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- list the plant, tools and equipment required for construction
- describe enclosure construction methods
- describe footings and foundations
- read, interpret and make basic modifications to plans
- read and interpret legislation, codes of practice and other formal agreements that impact on the work activity
- identify specific WHS requirements relating to the activity and site conditions
- identify typical issues and challenges that occur on site.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – cabling field of work and include access to:

- sites where enclosure construction and connection may be conducted

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- construction tools and equipment currently used in industry
- relevant regulatory and equipment documentation that impacts on construction.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL212 Erect aerial cable supports

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes skills and knowledge required to erect cable supports in small aerial client installations and access networks where they may be required to do new installations, upgrades or maintain existing networks in domestic, commercial and industrial installations to deliver services in xdigital subscriber lines (xDSL), fibre to the home (FTTH) and hybrid fibre coaxial (HFC) networks.

It applies to individuals working as telecommunications linesmen and line installers who make use of aerial support structures and specialist tools.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements.

Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Unit Sector

Telecommunications – cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to install aerial cable structure	1.1 Obtain construction plan from appropriate personnel to scope work and arrange for site access

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ELEMENT	PERFORMANCE CRITERIA
	1.2 Notify appropriate personnel of identified safety hazards at cabling worksite 1.3 Determine cable route from construction plan, identifying and avoiding other services 1.4 Obtain plant, tools, safety equipment and material to perform tasks safely and efficiently
2. Install aerial support structures	2.1 Use tools according to enterprise guidelines and work health and safety (WHS) regulations 2.2 Erect safety barriers according to enterprise guidelines to secure site 2.3 Excavate hole to specifications and according to enterprise guidelines for erection of mounting pole 2.4 Install pole using mechanical lifting devices according to enterprise guidelines 2.5 Install fixing structures on pole securely according to manufacturer's specifications 2.6 Install aerial fixing devices where support is other than pole according to enterprise guidelines
3. Complete project	3.1 Complete reports according to enterprise policy and record alterations to plans using appropriate symbols 3.2 Recover obsolete materials and equipment and return to appropriate point for disposal 3.3 Restore site according to requirements of enterprise or approving authority and to client satisfaction 3.4 Notify appropriate personnel of job completion and obtain sign off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.3, 2.3, 2.5, 3.1, 3.4	• Interprets information from technical sources to identify relevant and key information

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Writing	1.2, 3.1	• Documents outcomes and changes to plans using industry relevant terminology and recognised plan symbols
Numeracy	1.3, 2.3	• Interprets scales and ratios on plans • Performs basic calculations appropriate to measuring and estimating size
Navigate the world of work	1.2, 2.1, 3.1, 3.3	• Takes personal responsibility for adherence to legal, regulatory and organisational requirements relevant to own work context
Interact with others	1.1, 1.2, 3.4	• Identifies and follows accepted communication practices and protocols when liaising with clients and internal and external personnel on technical and operational matters
Get the work done	1.1, 1.4, 2.1-2.6, 3.2, 3.3	• Determines job sequence and works logically and systematically to undertake clearly defined tasks • Analyses task requirements to decide on appropriate equipment and practices • Implements actions as per plan, making slight adjustments if necessary, and addressing some unexpected issues • Automatically implements standard procedures for routine decisions in response to familiar problems

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTCBL212 Erect aerial cable supports	ICTCBL2132A Erect aerial cable supports	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL212 Erect aerial cable supports

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- install a pole and aerial fixing device after relevant authorities have been notified and approvals obtained prior to commencement
- demonstrate use of specialised hand or power tools and equipment for the installation of aerial cable supports safely
- apply work health and safety (WHS) requirements and work practices associated with the installation of aerial cable supports, including protective clothing and personal safety items, adequate warning signs and safety devices.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe the features and operating requirements of equipment
- describe the information required to operate equipment according to a specification
- identify legislation, codes of practice and other formal agreements that impact on the work activity
- describe licence requirements for working at heights
- identify the manufacturer’s requirements for safe operation of equipment
- identify specific WHS requirements relating to the activity and site conditions
- describe test methods and performance requirements
- identify typical issues and challenges that occur on site.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications – cabling field of work and include access to:

- sites where aerial cable supports may be installed
- plant, tools and equipment to erect aerial supports currently used in industry
- relevant regulatory and equipment documentation that impacts on aerial support erection activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL219 Apply safe technical work practices for cabling registration when configuring an ADSL circuit

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to practice safe installation, alteration and configuration of the carrier network termination device/asymmetric digital subscriber line (NTD/ADSL) filter and modem/mode 3 socket/cabling, for an alarm system connected to a monitoring station using a carrier line supporting an ADSL modem service, used for Open and Restricted Cabling Registration.

It applies to cablers, installers and technicians working in the field of installation, maintenance or upgrades of existing systems in voice, data or security systems, and in the context of technology convergence and digital subscriber line (DSL) technologies as applied in the telecommunications industry.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Unit Sector

Telecommunications – cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Build and test direct current (DC) and alternating current (AC)	1.1 Identify any hazards and work health and safety (WHS) issues for safe worksite and notify appropriate personnel

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ELEMENT	PERFORMANCE CRITERIA
circuits and telephone earthing	1.2 Connect series and parallel DC and AC circuit configuration following safe work practices 1.3 Choose appropriate test equipment and measure values of electrical quantities of circuits 1.4 Use calculations to verify measured values of electrical quantities in series and in parallel circuit configuration 1.5 Compare measured values to calculated values and determine reasons for any variations 1.6 Evaluate results and determine probable faults if relevant 1.7 Measure voltages present on telephone line and compare to exchange battery voltage 1.8 Measure resistance to earth, ensuring electrical earth in telecommunications installation
2. Configure a safe ADSL circuit configuration with mode 3 connection	2.1 Determine effects of bandwidth, frequency and attenuation on DSL circuits as used for broadband client access 2.2 Design and configure ADSL circuit from network boundary through to mode 3 socket for alarm system connected to monitoring station 2.3 Configure connection to ensure that ADSL circuit is not disconnected for safety reasons when alarm activation in conjunction with a mode 3 socket disconnects plain old telephone service (POTS) circuit 2.4 Use level 3 tester to verify correct termination and installation of digital transmission line
3. Diagnose and rectify faults	3.1 Determine urgency and impact of faults and required response timeframe for clearance 3.2 Identify type of fault and determine most probable causes of fault from data and historical trends where available 3.3 Select tools and test equipment relevant to system and type of fault 3.4 Diagnose fault in methodical and safe manner using suitable fault-finding technique 3.5 Isolate fault progressively to remove likely variables from diagnostic 3.6 Determine options to rectify fault and present to client for decision on rectification 3.7 Document test methods and results, and file with other system

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ELEMENT	PERFORMANCE CRITERIA
	installation records
4. Alter existing services	4.1 Identify existing and proposed cable systems for altering services to existing installation 4.2 Plan alterations to cause minimal disruption to ongoing client activity 4.3 Use appropriate tools to safely terminate telecommunications cables and outlets 4.4 Identify and rectify any cable fault 4.5 Carry out alterations in safe manner and according to both mandatory and recommended industry standards 4.6 Identify risks posed by contact with remote power feeding services 4.7 Test alteration and obtain sign off with client

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	3.2, 4.7	• Uses explicit strategies to make connections between information and ideas while reading
Writing	3.6, 3.7	• Interrelates ideas, information and some support material when writing about familiar topics
Oral Communication	1.1, 3.6	• Demonstrates awareness of choices for register, especially in situations that are familiar
Numeracy	1.3-1.5, 1.7, 3.1, 3.2, 4.7	• Uses 'in the head' and written methods to calculate, and uses calculation and technological processes and tools to undertake the problem solving process
Navigate the world of work	1.1, 1.2, 2.1, 4.5, 4.6	• Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work context, and draws attention to any issues that may affect self or others
Get the work done	1.3, 1.6, 2.1-2.4, 3.1-3.7, 4.1-4.4,	• Implements actions as per plan, making slight adjustments if necessary, and addressing some unexpected issues

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	4.7	• Automatically implements standard procedures for routine decisions in response to familiar problems • Understands when to take responsibility and when to notify others

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTCBL219 Apply safe technical work practices for cabling registration when configuring an ADSL circuit	ICTCBL2139B Apply safe technical work practices for cabling registration when configuring an ADSL circuit	Updated to meet Standards for Training Packages Performance Criteria clarified	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL219 Apply safe technical work practices for cabling registration when configuring an ADSL circuit

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- demonstrate the use of asymmetric digital subscriber line (ADSL) concepts in application and design
- demonstrate fault-finding techniques to locate cabling faults in telecommunications networks
- solve calculations for direct current (DC) and alternating current (AC) electrical problems
- apply digital transmission principles and testing
- demonstrate the use of ADSL test equipment
- comply with all related work health and safety (WHS) requirements and work practices in the alteration of existing client services.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- discuss WHS issues and practices relating to ADSL circuits and working with electricity
- describe typical electrical faults, fault-finding techniques and the type and use of testing equipment, including:
  - multimeter to measure direct current (DC) voltage, current and resistance
  - continuity tester to check continuity wiring
  - testing of open circuits and short circuits
  - ADSL test set
- identify the appropriate tools used in ADSL cabling

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- describe the types of cable terminations used for a range of telecommunications cable applications
- outline the following:
  - ADSL circuitry and configurations
  - digital transmission concepts, including installation practices and testing
  - procedures in altering existing services, including sign off
  - the distinction between analog and digital signals.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications – cabling field of work and include access to:

- special purpose tools, equipment and materials
- a site where altering of existing services for a client may be conducted
- appropriate AC and DC testing equipment
- manufacturer's documentation and equipment
- correct tools and measuring equipment currently used in industry.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL238 Install, maintain and modify customer premises communications cabling: ACMA Lift Rule

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0. Minor updates to Foundation Skills and Assessment Requirements.
Release 1	This version released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to safely install, maintain and modify communications cabling required on a customer's premises, according to Australian Communications and Media Authority (ACMA) Lift Cabling Provider Rule.

It applies to individuals who are qualified licensed electricians working in technical roles for lift installations on new or upgrade installations for an existing network or subsystem for convergence to next generation network (NGN) applications.

All customer cabling work in the telecommunications, fire, security and data industries must be performed by a registered cabler. All cablers are required to register with an ACMA accredited registrar.

To undertake aerial and underground cabling, individuals must attain the specialist competencies as indicated in ACMA cabling provider rules Pathways to cabling registration.

Unit Sector

Telecommunications – cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA

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ELEMENT	**PERFORMANCE CRITERIA**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Work within constraints imposed by customer premises and ACMA regulatory environment	1.1 Prepare for lift cabling work according to regulatory environment, cabling environment, cable type, cable identification, termination systems, earthing and protection, records and relevant legislation, codes, regulations and standards 1.2 Identify building infrastructure that places critical constraints on cabling when undertaking typical lift cabling installation from local distributor (LD) to lift car socket 1.3 Develop strategies to manage other infrastructure in relation to cabling 1.4 Notify appropriate personnel of identified safety hazards at cabling worksite
2. Manage remote power feed	2.1 Identify and avoid risks posed by contact with remote power feeding services when performing cabling activity 2.2 Make site safe by identifying remote power feeding services that operate at above telecommunications network voltage (TNV) inside customer premises
3. Install and modify cable support, earthing and termination infrastructure	3.1 Install fixings and cable support structures of adequate strength safely and align with environment according to manufacturer’s and customer’s specifications 3.2 Secure catenary supports to building structure and tension where necessary to ensure cable weight can be carried in operating conditions with interference and safety segregation maintained, including adherence to current Australian Standards 3.3 Install protective earthing of metal work to industry standards where required 3.4 Inspect installed support structure to ensure cable will not be exposed to damage during installation and general operation 3.5 Position terminating equipment and fixing to accepted industry codes of practice, current Australian Standards and customer requirements 3.6 Inspect control cubicles, travelling cable supports, junction boxes, line isolator units, backmount and outlet layout, to ensure compliance with manufacturer’s specifications, allow adequate work space for ease of access and avoid overlaying 3.7 Segregate incoming and outgoing cables to ensure ease of access, and avoid overlaying

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ELEMENT	PERFORMANCE CRITERIA
4. Install cables and earth wires	4.1 Install lift communications cable from LD to lift car socket 4.2 Install cables according to manufacturer's application specifications, including tension and bending stress requirements 4.3 Identify and avoid sources of possible damage to cable, including hot pipes, sharp edges, cable burn, kinks and stretching 4.4 Allow sufficient excess at cable ends to facilitate termination 4.5 Place and secure cable to maintain safety and interference segregation according to legislative and industry standards 4.6 Install cable fasteners with correct tension to prevent cable sheath damage or transmission impairment, and trim flush to prevent risk of personal damage 4.7 Install aerial cables supported by catenaries in external environment to meet minimum above ground clearances and clearances from hazardous electrical services according to current Australian Standards 4.8 Install and secure travelling cables to maintain safety and according to relevant legislative, industry and manufacturer’s standards 4.9 Install local isolation units (LIU) as required according to current Australian Standards 4.10 Install over-voltage protection devices to all cable pairs, where required, to suppress voltage surges, with devices protectively earthed and according to current Australian Standards 4.11 Protect earth wire insulation against damage with protective earths segregated according to relevant industry and legislative standards
5. Terminate and test cables and earth wires	5.1 Remove cable sheath to allow for correct termination length and without damage to underlying conductors and their insulation 5.2 Install terminating modules according to manufacturer’s specifications, ensuring cable pairs are neatly and sequentially fanned for termination 5.3 Terminate conductors according to recommended colour code sequence using appropriate termination tools in manufacturer’s specified manner 5.4 Earth cable shield, if applicable, to manufacturer’s specifications and relevant industry codes of practice, including current Australian Standards 5.5 Undertake visual inspection to confirm termination colour code sequence has been followed, prior to end to end testing of wire and

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ELEMENT	PERFORMANCE CRITERIA
	pair termination integrity 5.6 Terminate earth wires with connectors recommended by manufacturer according to relevant industry codes of practice, including current Australian Standards 5.7 Maintain earth wire continuity throughout to meet interface requirements with electrical systems 5.8 Test earthing installation for continuity, insulation resistance and conductive resistance according to relevant industry standards, including current Australian Standards 5.9 Confirm compatibility of alterations with existing systems and test new work both in isolation and when integrated with existing systems
6. Inspect cable route to ensure correct separations	6.1 Inspect separations along entire cable route and rectify separations that do not comply with regulations 6.2 Install barriers to achieve separations where sufficient spatial separation cannot be met
7. Evaluate earthing needs for cable systems on customer premises	7.1 Locate existing customer earthing systems and analyse earthing needs of cable systems 7.2 Calculate upper and lower limits of resistance for variety of cable system earths using relevant cable characteristics
8. Label earthing systems	8.1 Identify label requirements for all types of earthing systems 8.2 Attach label to earthing systems according to industry regulations
9. Create or update cable plans and records	9.1 Document installation details on record sheets and plans, and store according to customer requirements 9.2 Label cable pairs clearly to provide accurate identification according to manufacturer's, industry and customer standards 9.3 Record cabling details in cable pair record books to provide accurate record according to industry codes of practice and current Australian Standards 9.4 Complete Telecommunications Cabling Advice (TCA) form
10. Monitor work activity	10.1 Maintain close supervision of cablers not holding appropriate registration for task to ensure installation and maintenance activity is strictly according to legislative requirements and industry standards for safety and network integrity, including all current Australian Standards

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Description
Reading	• Interprets complex technical information, legislation, codes, regulations and standards to identify key requirements
Writing	• Completes required documentation to meet customer, organisational and legislative requirements using industry relevant terminology
Oral communication	• Delivers clear and specific instructions and confirms understanding using questioning and active listening
Numeracy	• Takes measurements and interprets results
Navigate the world of work	• Takes responsibility for adherence to legal, regulatory and organisational requirements relevant to own work context, including supervising the work of others
Interact with others	• Identifies and follows accepted communication practices and protocols when liaising with customers, internal and external personnel on technical and operational matters
Get the work done	• Determines job sequence and works logically and systematically to undertake clearly defined tasks • Analyses task requirements to decide on appropriate equipment and practices • Implements actions as per plan, making adjustments if necessary, and addressing some unexpected issues • Automatically implements standard procedures for routine decisions in response to familiar problems

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTCBL238 Install, maintain and modify customer premises communications cabling: ACMA Lift	ICTCBL238 Install, maintain and modify customer premises communications cabling: ACMA Lift	Updates to application, knowledge evidence, and foundation skills	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
Rule (Release 2)	Rule (Release 1)		

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL238 Install, maintain and modify customer premises communications cabling: ACMA Lift Rule

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0. Minor updates to Foundation Skills and Assessment Requirements.
Release 1	This version released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- install a lift cabling system from local distributor (LD) via a travelling cable to a lift car socket, including accurate completion of installation records, drawing alterations and compliance forms
- read and interpret cable drawings and plans for locations and terminations
- apply cable conductor identification codes
- conduct and interpret cable test results
- interpret and apply related regulations and industry codes
- comply with all related work health and safety (WHS) requirements and work practices.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

- Australian Communications and Media Authority (ACMA) competency requirements for Telecommunications Cabling Provider Rules
- the features and operating requirements of test equipment
- the information required to operate equipment according to a test specification

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- legislation, codes of practice and other formal agreements that impact on the work activity
- manufacturer's requirements for safe operation of equipment
- explain protection earthing
- the features of lift construction and the types of cables required
- the types of cable used for manual controlled fire services
- cables and the types of cabling
- common distributors
- specific WHS requirements relating to the activity and site conditions
- typical issues and challenges that occur on site.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace and include access to:

- a site on which lift communications cabling activities may be carried out
- cabling and field equipment currently used in industry
- licensing requirements and other site related documentation.

Note: All client cabling work in the telecommunications, fire, security and data industries must be performed by a registered cabler. All cablers are required to register with an Australian Communications and Media (ACMA) accredited registrar. Assessment by a Telecommunications Industry Training Advisory Board (TITAB) registered assessor is recommended for this unit.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL301 Install, terminate and certify structured cabling installation

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to place, secure and terminate structured cabling for indoor and outdoor installations and to certify the installation within a domestic, commercial or industrial client's premises.

It applies to technical staff who install, terminate and certify structured cabling installations for communications applications including digital and analog, telephony, data, video, digital broadcasting, computer networks, local area networks (LAN), wide area networks (WAN) and multimedia.

All client cabling work in the telecommunications, fire, security and data industries must be performed by a registered cabler. All cablers are required to register with an Australian Communications and Media (ACMA) accredited registrar.

The ACMA Pathways for Cabler Registration of Specialist Competency ICTCBL301 requires completion of ICTCBL247 and a WHS/OHS unit.

Unit Sector

Telecommunications – cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for	1.1 Confirm client requirements and ensure compliance with relevant

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ELEMENT	PERFORMANCE CRITERIA
installation of structured cabling	legislation, codes, regulations and standards 1.2 Arrange access to site according to required procedure 1.3 Inform appropriate personnel of identified safety hazards on worksite 1.4 Organise tools and cabling products equipment for given work 1.5 Erect barriers according to safety requirements 1.6 Select cable type and match structured cabling to installation environment and client requirements 1.7 Verify proposed route to meet manufacturer’s specifications and industry standards
2. Install structured cable	2.1 Place and secure correct type of cable following work health and safety (WHS) and environmental requirements, and according to accepted industry practice and standards 2.2 Maintain cable and services separations in runs and cross overs to meet manufacturer and industry standards 2.3 Install structured cabling to industry standards 2.4 Minimise twist ratio defects to avoid accumulation effect on structured cable performance 2.5 Fit over-voltage protection devices to all cables and metallic components where required
3. Terminate structured cable	3.1 Terminate cable according to accepted industry practice and standards 3.2 Maintain correct twist ratio to optimise system performance at rated level 3.3 Use correctly rated termination hardware with appropriate termination tool to ensure integrity and performance of termination 3.4 Earth cable shield to manufacturer’s specifications and relevant industry standards if applicable
4. Certify system performance to required level and complete documentation for client	4.1 Test installation and termination to comply with certification requirements 4.2 Record and verify system performance promptly where required 4.3 Authorise and issue appropriate documentation to client to certify system performance and complete records where required 4.4 Reinstate site to client's satisfaction and dispose of waste in environmentally safe manner 4.5 Notify client and obtain sign off

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	• Integrates new ideas and information with existing understanding • Recognises the structures and distinguishing features of a range of familiar text types
Writing	• Sequences writing to produce cohesive text
Oral Communication	• Uses clear language and concepts, and tone and pace appropriate for the audience and purpose
Numeracy	• Interprets and comprehends whole numbers and familiar or routine fractions, decimals and percentages
Navigate the world of work	• Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work context, and draws attention to any issues that may affect self or others
Interact with others	• Recognises the purpose of various communications directly relevant to own role
Get the work done	• Implements actions as per plan, making slight adjustments if necessary, and addressing some unexpected issues • Automatically implements standard procedures for routine decisions in response to familiar problems • Understands when to take responsibility and when to notify others

Range of Conditions

This section specifies different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Over-voltage protection devices requirements ***must***	• ACMA standards • enterprise or local environmental hazard

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comply with:	• manufacturer's specifications.

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTCBL301 Install, terminate and certify structured cabling installation	ICTCBL301 Install, terminate and certify structured cabling installation	Updates to application, performance evidence, and range of conditions. Updated template to apply consistent format between units.	Equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL301 Install, terminate and certify structured cabling installation

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- install, terminate and certify a structured cabling installation to industry standards, applying related work health and safety (WHS) requirements and work practices
- install and test the following UTP (Cat 6, Cat 6A & Cat 7) and FTP (Cat 6 2x2)
- install termination hardware
- conduct a termination test and interpret the results
- verify compliance with manufacturer’s installation specifications and warranties
- provide a report certifying the installation and test results to the client.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- Australian Communications and Media Authority (ACMA) competency requirements for Telecommunications Cabling Provider Rules
- legislation, codes of practice and other formal agreements that impact on the work activity
- application of industry standards on cable bending, anchors, tension, twist and labelling
- tools and equipment commonly used in cable installations and testing
- features and operating requirements of test equipment

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- types and structure of cable and termination hardware used in communications installations
- information required to operate equipment according to a test specification
- identify the manufacturer's requirements for safe operation of equipment
- identify specific WHS hazards and requirements relating to the activity and site conditions
- test methods and performance requirements
- different types of records and documentation that may be required for certification and reporting
- typical issues and challenges that occur on site.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- sites where installation, termination and certification of structured cabling may be conducted
- testing equipment currently used in industry
- relevant regulatory and equipment documentation that impacts on installation.

Note: All client cabling work in the telecommunications, fire, security and data industries must be performed by a registered cabler. All cablers are required to register with an Australian Communications and Media (ACMA) accredited registrar. Assessment by a Telecommunications Industry Training Advisory Board (TITAB) registered assessor is recommended for this unit.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL303 Install and terminate coaxial cable

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This unit first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to install and terminate coaxial cable on client premises in communications applications, digital and analog, including master antenna television (MATV), cable television (CATV), closed-circuit television (CCTV), digital video broadcasting – terrestrial (DBVT), digital video broadcasting – satellite (DVB-S), data and video, including digital broadcasting, computer networks such as local area networks (LAN) and wide area networks (WAN), and multimedia.

It applies to technical staff who install and terminate coaxial cable for new installations, upgrades or the maintenance of existing networks in domestic, commercial and industrial installations on a client's premises.

Where this unit of competency is undertaken as a competency related to the ACMA Cabler Registration, this requires prior completion of ICTCBL247 and a WHS/OHS unit of competency.

All cabling work for clients in the telecommunications, fire, security and data industries must be performed by a registered cabler. All cablers are required to register with an Australian Communications and Media Authority (ACMA) accredited registrar.

Unit Sector

Telecommunications – cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*

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ELEMENT	PERFORMANCE CRITERIA
1. Prepare to install and terminate coaxial cable	1.1 Prepare for given work according to relevant legislation, codes, regulations and standards 1.2 Arrange access to site according to required procedure 1.3 Inform appropriate personnel of identified hazards on worksite 1.4 Select coaxial cable type, connectors and manufacturer's tool to comply with installation environment and client requirements 1.5 Check proposed route and bend radius to meet manufacturer's specifications and industry standards 1.6 Test cable on drum for continuity and inspect visually for crushing and kinks 1.7 Discuss with client proposed method of installation and cable route, and adjust if necessary
2. Install, terminate and test coaxial cable	2.1 Maintain cable segregation to industry standards 2.2 Protect integrity of coaxial shield cable to ensure no loss of signal during operation and maintain bend ratios to not exceed manufacturer's specifications and industry standard 2.3 Install cable securing hardware to ensure cable is not crushed or kinked while maintaining cable manufacturer's bend radius 2.4 Install cable following work health and safety (WHS) and environmental requirements, and complying with manufacturer's specifications and industry standards 2.5 Terminate cable and perform type of termination specified in plan using safe work practices and according to manufacturer's specifications 2.6 Test termination for transmission loss and signal levels, and re-terminate the coaxial cable if the transmission loss exceeds the manufacturer's specifications 2.7 Record all measurements 2.8 Fit over-voltage protection devices to all cables with metallic component where required
3. Remove termination waste from work area	3.1 Clean work area thoroughly to minimise risk of injury from loose metal strands 3.2 Dispose of waste safely according to relevant environmental requirements 3.3 Restore worksite to client's satisfaction
4. Document installation	4.1 Update plans and records with details of installation and test

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ELEMENT	PERFORMANCE CRITERIA
	results 4.2 Show client completed work and ensure work matches agreed method of installation and cable route 4.3 Notify client of work completion and obtain sign off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	• Reads and interprets plans, specifications, and other documentation from a variety of sources and consolidates information
Writing	• Accurately records information and prepares documentation using clear language and organisational formats and protocols
Oral Communication	• Demonstrates an awareness of the need to vary structure, style, tone and vocabulary to meet the requirements of the audience, context and purpose
Numeracy	• Makes calculations appropriate for measuring and estimating materials • Performs mathematical calculations to check, interpret and confirm results of system tests
Navigate the world of work	• Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work context, and draws attention to any issues that may affect self or others
Interact with others	• Recognises the purpose of various communications directly relevant to own role
Get the work done.	• Implements actions as per plan, making slight adjustments if necessary, and addressing some unexpected issues • Automatically implements standard procedures for routine decisions in response to familiar problems • Understands when to take responsibility and when to notify others

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTCBL303 Install and terminate coaxial cable (Release 2)	ICTCBL303 Install and terminate coaxial cable (Release 1)	Updates to application and knowledge evidence. Updates to template to apply consistent format between units.	Equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL303 Install and terminate coaxial cable

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- install and terminate coaxial cable types including RG6 quad shielded coaxial cable
- install different connector types
- conduct and interpret test results
- verify the installation complies with manufacturer’s specifications and warranties
- prepare a report for a client that documents the installation and test results
- comply with all related work health and safety (WHS) requirements and work practices.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- legislation, regulations, standards and codes of practice associated with the installation of coaxial cables
- features of types of coaxial cable and the manufacturer's specifications that apply
- features and operating requirements of test equipment for coaxial cable
- information required to operate equipment according to a test specification
- manufacturer’s requirements for safe operation of coaxial cable tools and equipment
- safety precautions when working with coaxial cable and radio frequency (RF) based systems

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- specific WHS requirements relating to the activity and site conditions
- test methods and performance requirements
- types and techniques for connecting and termination of coaxial cable, including:
  - compression termination
  - crimp termination
- function of over-voltage protection devices
- transmission and propagation characteristics of coaxial cable
- typical issues and challenges that occur on site.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- special purpose tools, equipment and materials
- sites where installation and termination of coaxial cabling may be conducted
- equipment and personal protective equipment currently used in industry
- testing equipment currently used in industry
- relevant regulatory and equipment documentation that impacts on installation activities.

Note: All client cabling work in the telecommunications, fire, security and data industries must be performed by a registered cabler. All cablers are required to register with an Australian Communications and Media (ACMA) accredited registrar. Assessment by a Telecommunications Industry Training Advisory Board (TITAB) registered assessor is recommended for this unit.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL305 Hand over cable systems and equipment

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to effectively transfer control of a newly installed or upgraded system to a client. It includes the transfer of information to the client and the completion of relevant documentation.

It applies to field officers, technicians or technical supervisors from carriers, contractors or other service providers completing domestic, commercial or industrial installations. Communications applications include digital and analog, telephony, data, video, digital broadcasting, computer networks, local area networks (LAN), wide area networks (WAN) and multimedia.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*

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ELEMENT	PERFORMANCE CRITERIA
1. Inform client of system functions and capacities	1.1 Provide client with cables systems and equipment information 1.2 Demonstrate physical installation, cable system usage or equipment operation and answer client queries on system functions 1.3 Confirm variations to specifications with client
2. Hand over records and documentation	2.1 Update documentation and plans 2.2 Present complete and orderly records and system documentation to client 2.3 Adhere to all relevant company policies and relevant legislation, codes, regulations and standards
3. Complete contract documentation	3.1 Provide guarantees to client in required format where work is subject to guarantee 3.2 Present invoices to client to complete contractual arrangements 3.3 Obtain client's sign off to confirm acceptance of cabling work completed where required 3.4 Advise client of opportunities for system upgrades, additional services and training where appropriate

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Description
Reading	• Reads and interprets plans, specifications and technical information to pass on to client • Evaluates information and products from a variety of sources to ensure appropriateness to client needs
Writing	• Prepares documentation and correspondence using clear language and correct spelling and terminology • Accurately records and completes information in organisational systems • Records outcomes of communication with client for action

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Oral Communication	• Interacts effectively in verbal exchanges, using active listening and questioning, to convey and clarify information • Clearly explains detailed information using language, tone and pace appropriate to the audience
Numeracy	• Performs mathematical calculations to present financial data and contract requirements, and to accurately process invoice
Navigate the world of work	• Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements
Interact with others	• Uses a range of strategies to establish a sense of connection and build rapport with clients and workmates • Recognises and accommodates basic differences and priorities of others
Get the work done	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes • Uses familiar digital technologies and systems to access information, enter data, present information and communicate with the client

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTCBL305 Hand over cable systems and equipment (Release 2)	ICTCBL305 Hand over cable systems and equipment (Release 1)	Updates to knowledge evidence, and foundation skills	Equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL305 Hand over cable systems and equipment

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- demonstrate and explain the cable and equipment system to the client
- present accurate records and system documentation to the client
- complete contract documentation
- respond to client requests.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

- cabling types, connectors and cabling structures
- equipment on the client's premises
- typical performance parameters and faults that may be encountered with the client equipment
- various equipment types
- warranty information for equipment supplied and contractor work guarantees.
-

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – cabling field of work and include access to:

- sites where cabling system and client equipment have been installed or upgraded
- relevant regulatory and equipment documentation that impacts on system and equipment installation activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL306 Locate and identify cable system faults

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to locate and identify cable system faults in communications cables at enterprise and client premises sites. The cable types may be telecommunications digital, voice and data in digital TV cabling.

It applies to technical staff who are required to locate and rectify communications cable system faults, including local area networks (LAN) and wide area networks (WAN), master antenna television (MATV), cable television (CATV), closed-circuit television (CCTV), digital video broadcasting – terrestrial (DVB-T), digital video broadcasting – satellite (DVB-S), security alarm systems, fire systems, voice over internet protocol (VoIP) networks and radio communications. The telecommunications cabling types may by twisted pair, coaxial or fibre optic types’

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the Implementation Guide Companion Volume or the relevant regulator for specific guidance on requirements.

Unit Sector

Telecommunications – cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*

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ELEMENT	PERFORMANCE CRITERIA
1. Prepare to locate and rectify cable fault	1.1 Prepare for given work according to relevant legislation, codes, regulations and standards 1.2 Inform appropriate personnel of existing and potential hazards on worksite 1.3 Arrange access to site according to required procedure 1.4 Establish type of cable and nature of fault from client for cable system 1.5 Select suitable testing tools and equipment and personal protective equipment to meet required industry standards
2. Locate and diagnose cable fault	2.1 Conduct appropriate test following work health and safety (WHS) and environmental requirements to identify type of cable fault 2.2 Isolate fault progressively to remove likely variables from assessment 2.3 Locate cable or cable termination equipment fault without undue interruptions to client activity in shortest possible time 2.4 Notify client of findings
3. Rectify fault	3.1 Present client with options to rectify fault 3.2 Advise client of costs of any repair not covered by service agreement 3.3 Conduct fault rectification, if client agrees, in a manner that is safe for repair team and client 3.4 Escalate any unresolved faults to other parties for resolution if required
4. Complete documentation and clean up worksite	4.1 Advise client of successful fault clearance and obtain sign off 4.2 Complete all records 4.3 Complete reports to justify fault diagnosis and rectification methodology if required 4.4 Remove all waste and debris from worksite and dispose of according to environmental requirements 4.5 Restore any changes made to worksite during fault repair to client’s satisfaction

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	• Interprets, consolidates and checks information and data • Interprets technical documentation and test results from equipment manuals and specifications
Writing	• Accurately records and completes information in organisational systems • Prepares documentation and correspondence using clear language and correct spelling and terminology
Oral Communication	• Clearly explains detailed information using language, tone and pace appropriate to the audience • Interacts effectively in verbal exchanges using active listening, questioning, and reading of verbal and non-verbal signals to convey and clarify information
Numeracy	• Performs mathematical calculations to check, interpret and confirm numerical information
Navigate the world of work	• Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements • Seeks advice and clarification for new activities
Interact with others	• Uses a range of strategies and reads verbal and non-verbal signals to establish a sense of connection and build rapport with clients and workmates • Selects and uses appropriate conventions and protocols when communicating to clients and co-workers in a range of work contexts
Get the work done	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes • Accepts responsibility for addressing less predictable problems and initiates standard procedures in response, applying problem solving processes in determining a solution • Uses familiar digital technologies and systems to test cables, access information, enter data, present information and communicate with others

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTCBL306 Locate and identify cable system faults (Release 2)	ICTCBL306 Locate and identify cable system faults (Release 1)	Updates to application and knowledge evidence. Updates to template to apply consistent format between units.	Equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL306 Locate and identify cable system faults

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify different faults using checks, tests and fault-finding methodology
- determine and rank likely causes of fault
- provide the client with solutions for rectifying faults
- rectify the faults
- escalate unresolved faults to other parties for resolution
- comply with all related health and safety requirements and work practices.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- Australian Communications and Media Authority (ACMA) competency requirements for Telecommunications Cabling Provider Rules
- features and operating requirements of test equipment
- equipment according to a test specification
- legislation, codes of practice and other formal agreements that impact on the work activity
- manufacturer’s requirements for safe operation of testing instruments
- specific work health and safety (WHS) requirements relating to the activity and site conditions
- test methods and identify the test performance requirements

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- typical issues and challenges that occur on site.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- sites where cable system tests may be conducted
- fault-finding equipment currently used in industry
- relevant regulatory and equipment documentation that impacts on cable system testing and fault-finding activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL311 Install systems and equipment on customer premises

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to install customer premises cabling and equipment for indoor and outdoor installations. This may include communications applications such as telephony, broadband data, video including digital broadcasting, and computer networks including local area networks (LAN), wide area networks (WAN) and multimedia.

It applies to field officers, technicians or technical supervisors from carriers, contractors or other service providers who provide voice, data and security installation and maintenance services.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for customer premises systems and equipment installation	1.1 Prepare for given work according to relevant legislation, codes, regulations and standards 1.2 Arrange access to site according to required procedure 1.3 Inform appropriate personnel of existing and potential hazards on

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ELEMENT	PERFORMANCE CRITERIA
	worksite 1.4 Verify location of proposed customer communications equipment installation according to plans obtained from authorised personnel 1.5 Develop installation plans to ensure minimal disruption to workplace and according to standards 1.6 Select suitable tools and equipment
2. Install system hardware	2.1 Install network equipment following work health and safety (WHS) and environmental requirements according to manufacturer's instructions 2.2 Confirm service interruption is within limits agreed with customer 2.3 Complete cable jumpering to distribution infrastructure and terminal equipment to specification 2.4 Document all installation drawings for customer
3. Configure and test system	3.1 Install software and, if required, configure system according to specifications 3.2 Test to verify system performance according to customer requirements 3.3 Record all test results
4. Clean up worksite and compete documentation	4.1 Remove and dispose of installation waste and debris from worksite according to environmental requirements 4.2 Restore worksite to customer's satisfaction 4.3 Complete all installation documents and present to customer 4.4 Notify customer and obtain signoff

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.4, 1.5, 2.1, 2.3, 3.1, 3.2	• Analyses and consolidates test results and data from a range of sources, against defined criteria and requirements • Reads and interprets plans, specifications and other documentation from a variety of sources and consolidates

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		information to determine requirements
Writing	1.2, 1.3, 1.5, 2.4, 3.3, 4.3, 4.4	• Prepares documentation and correspondence using clear language and correct spelling and terminology • Accurately records and completes information in organisational systems
Oral Communication	2.2, 4.3, 4.4	• Interacts effectively in verbal exchanges using active listening, questioning and reading of verbal and non-verbal signals to convey and clarify information • Presents complex information in formal situations using clear and convincing language, tone and pace appropriate for the audience and purpose
Numeracy	2.1, 2.3, 3.2, 3.3	• Make calculations appropriate for measuring and estimating materials for construction • Performs mathematical calculations to check, interpret and confirm results of system tests
Navigate the world of work	1.1, 1.2, 1.5, 2.1, 4.1	• Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements • Identifies and acts on issues that contravene relevant policies, procedures and legal requirements
Interact with others	1.2-1.4, 2.2, 4.2-4.4	• Uses a range of strategies to establish a sense of connection and build rapport with customers and workmates
Get the work done	1.1, 1.5, 1.6, 2.1, 2.3, 3.1, 3.2, 4.1, 4.2	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes • Accepts responsibility for addressing less predictable problems and initiates standard procedures in response, applying problem solving processes in determining a solution

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTCBL311 Install systems and equipment on customer premises	ICTCBL3049A Install systems and equipment on customer premises	Updated to meet Standards for Training Packages	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL311 Install systems and equipment on customer premises

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- read and interpret:
  - related floor plans
  - building plans
  - reflected ceiling plans
  - schematic drawings
- install customer premises equipment
- configure and test systems and equipment
- apply relevant regulations and standards
- comply with all related health and safety requirements and work practices.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify and select cabling types, connectors and cabling structures
- describe the connections to carrier infrastructure or equipment, such as main distribution frame (MDF) or asymmetric digital subscriber line (ADSL), multiplexer (MUX), integrated services digital network (ISDN), network termination device (NTD) or other carrier interface unit
- recognise electrical and/or optical properties to be measured
- explain the health and safety considerations for the works including:
  - electrical safety
  - lifting hazards
  - manufacturer’s requirements for safe operation of equipment

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- describe the equipment to be installed on the customer's premises
- identify and select the test methods and performance requirements for the installation
- identify typical issues and challenges that occur on the worksite.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – cabling field of work and include access to:

- a site where installation of electronic equipment and customer cabling may be conducted
- plant, tools and equipment currently used in industry
- relevant regulatory and equipment documentation that impacts on work activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL314 Install network cable equipment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to install indoor or outdoor, domestic, commercial or industrial network cable equipment at a client's premises or service provider access networks. This may include communications applications in telephony, broadband, data, video, radio frequency (RF) equipment, security and computer networks, including local area networks (LAN), wide area networks (WAN) and multimedia.

It applies to technicians and lineman installers who install network cable equipment within the broadband infrastructure deployment where they may upgrade coaxial or optical fibre cables as part of a hybrid fibre coaxial (HFC) network, a broadband access network or a large client private network.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the Implementation Guide Companion Volume or the relevant regulator for specific guidance on requirements.

Unit Sector

Telecommunications – cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for installation	1.1 Obtain relevant legislation, codes, regulations and standards for given work 1.2 Scope work by obtaining project plan from appropriate personnel

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ELEMENT	PERFORMANCE CRITERIA
	and arrange for site access to comply with security arrangements 1.3 Notify appropriate personnel of identified safety hazards at worksite 1.4 Determine cable route and type of network cable equipment from project plan, and identify and avoid other services 1.5 Obtain plant, tools and safety equipment and material to perform tasks safely and efficiently 1.6 Evaluate nature of job and infrastructure hierarchy from plan, and obtain approval from client on key features of installation to meet client requirements 1.7 Coordinate other parties to minimise disruption to services and down time 1.8 Segregate incoming and outgoing cables to facilitate access and avoid overlaying and backtracking of cable
2. Install required cable and equipment support structure	2.1 Evaluate existing equipment support structure and develop plan for additional support structure provisioning 2.2 Install additional cable support, equipment support structure and cable runs according to manufacturer's specifications, industry practice, and health and safety and environmental requirements 2.3 Determine cable route between rack and sub-rack and cable termination point to comply with client requirements, site limitations, equipment specifications and regulations 2.4 Install cabling infrastructure to interface rack and sub-rack according to installation instructions 2.5 Complete cabling requirements to support installation of equipment
3. Install equipment and earthing protection	3.1 Install lightning protection equipment where required, according to manufacturer's specifications and industry practice 3.2 Install earthing protection and line conditioning where required, according to relevant Australian Communications and Media Authority (ACMA), local power company and industry practice 3.3 Install equipment component into rack and sub-rack and complete connections according to manufacturer's specifications and compliance with warranty requirements
4. Perform tests	4.1 Power-on test individual equipment items 4.2 Visually check that all connections and interconnections are firm and sound

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ELEMENT	PERFORMANCE CRITERIA
	4.3 Electrically test all terminations for continuity according to enterprise guidelines
5. Complete project documentation	5.1 Install labels to new equipment and radiation warning signs, where required, according to enterprise guidelines 5.2 Record test results for future reference, complete reports on equipment installation and amend design to reflect existing cable layout and equipment according to enterprise requirements 5.3 Recover obsolete materials and return to appropriate point for disposal 5.4 Restore site according to requirements of enterprise or approving authority and to client satisfaction 5.5 Notify appropriate personnel of job completion and obtain sign off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 1.4, 1.6, 2.2, 2.4, 3.1-3.3, 5.4	• Analyses and consolidates test results and data from a range of sources, against defined criteria and requirements • Reads and interprets plans, specifications and other documentation from a variety of sources and consolidates information to determine requirements
Writing	1.2, 1.3, 2.1, 5.1, 5.2, 5.5	• Prepares documentation and correspondence using clear language and correct spelling and terminology • Documents outcomes and changes to plans using industry relevant terminology and recognised plan symbols
Oral Communication	1.2, 1.3, 1.6, 1.7, 5.4, 5.5	• Interacts effectively in verbal exchanges using active listening, questioning and reading of verbal and non-verbal signals to convey and clarify information
Numeracy	2.3-2.5, 3.1-3.3, 4.1, 4.3	• Makes calculations appropriate for measuring and estimating materials for construction • Takes measurements and uses them for work layout and construction • Performs mathematical calculations to check, interpret and confirm results of system tests

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Navigate the world of work	1.6, 2.2-2.4, 3.1-3.3, 4.3, 5.1, 5.2, 5.4	• Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements • Identifies and acts on issues that contravene relevant policies, procedures and legal requirements
Interact with others	1.2, 1.3, 1.6, 1.7, 5.4, 5.5	• Uses a range of strategies to establish a sense of connection and build rapport with clients and co-workers • Recognises and accommodates basic differences and priorities of others
Get the work done	1.1, 1.2, 1.4-1.8, 2.1-2.5, 3.1-3.3, 4.1-4.3, 5.1, 5.3, 5.4	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes • Makes decisions and implements procedures for routine tasks, using formal decision making processes for more complex and non-routine situations. • Addresses problems and initiates standard procedures in response, applying problem solving processes in determining a solution

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTCBL314 Install network cable equipment	ICTCBL3069A Install network cable equipment	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL314 Install network cable equipment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- prepare for installation of network cable equipment
- provide cable infrastructure
- install cable equipment support structure for power, alarms and interrogation requirements
- install equipment, test and interpret test results
- label equipment correctly
- safely use any specialised hand or power tools and equipment
- apply regulations and standards related to the installation
- comply with all related health and safety requirements and work practices.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify and select cabling types, connectors and cabling structures
- identify connections to carrier infrastructure or equipment, such as main distribution frame (MDF) or customer interface units (CIU)
- describe the network cable installation requirements for the client's equipment
- define the electrical and/or optical properties to be measured
- identify the health and safety considerations including:
  - electrical safety
  - lifting hazards
  - manufacturer’s requirements for safe operation of equipment
- describe the test methods and performance requirements to be used
- identify the typical issues and challenges that occur on the worksite

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- describe the purpose of warranties and service level agreements.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – cabling field of work and include access to:

- a site where installation of network cable equipment may be conducted
- plant, tools and equipment currently used in industry
- relevant regulatory and equipment documentation that impacts on work activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL316 Install ribbon fibre cable in the FTTX distribution network

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the performance outcomes, skills and knowledge required to install ribbon cable in the fibre access node (FAN) site and distribution, local and access underground enclosure joints. Cables may range from 12 fibre to 576 fibre cables.

It applies to individuals who are optical fibre cable installers and splicers deploying broadband access networks using optical technologies. They combine technical skills with specific work health and safety (WHS) skills to work safely on ribbon fibre.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

ICTCBL330	Splice and terminate optical fibre cable for carriers and service providers

Unit Sector

Telecommunications – cabling

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for installation of ribbon fibre	1.1 Select safety equipment to protect self, co-workers and public in line with WHS and environmental requirements 1.2 Identify and obtain tools and appropriate equipment required for installation 1.3 Check physical conditions relevant to installation and confirm layout of equipment to be installed 1.4 Inform appropriate personnel of identified hazards on worksite 1.5 Locate other services from relevant authorities 1.6 Secure worksite with tests for dangerous gases and guards around open manholes 1.7 Obtain approval for alterations to design within organisational guidelines
2. Check and secure existing optical fibre cable	2.1 Following WHS practices, verify that cable was installed according to installation plan and inspect cable for signs of sheath damage 2.2 Maintain minimum bend ratios of cable according to manufacturer specifications while manoeuvring into position 2.3 Secure cable according to safe industry practice, avoiding damage to cable and sheath
3. Install ribbon fibres into high density drawers and/or pivot sub-racks in internal cabinets	3.1 Introduce cable into cabinet rack through appropriate route 3.2 Remove cable sheath and lay up ribbon loose tubes into sub-racks without damage to fibre 3.3 Remove loose tubes, clean ribbon fibres and prepare for splicing using organisational techniques 3.4 Splice ribbon fibres and secure into splice holders 3.5 Confirm that fibres are accurately spliced according to organisational specifications
4. Install and splice ribbon cable in underground enclosures	4.1 Select appropriate enclosure for function and cable type 4.2 Prepare cables for mid-span and butt splicing following vendor guidelines 4.3 Feed cable accurately into enclosure according to network owner guidelines

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	4.4 Lay up ribbon fibre in enclosure splice tray to allow accurate and efficient splicing 4.5 Cross-reference fibre numbering to match fibres accurately 4.6 Strip ribbon fibres to specifications 4.7 Splice ribbon fibres accurately 4.8 Apply heat-shrink sleeves to ensure protection of spliced ribbon fibres 4.9 Secure spliced ribbon fibres in splice holders
5. Close and seal enclosure	5.1 Check cable and ribbon fibre placement in splice trays conform to vendor and network owner specifications and adjust if necessary 5.2 Close and secure splice trays and fit enclosure cap 5.3 Heat shrink seals around cable entry ports when using heat shrinking techniques, according to vendor and network owner guidelines 5.4 Close and tighten seals around ribbon fibre cables when using mechanical sealing techniques, according to vendor and network owner guidelines 5.5 Check for signs of effective seal and re-seal if necessary
6. Complete site reinstatement, reporting and sign off requirements	6.1 Place sealed enclosure in pit and secure to vendor and network owner specifications 6.2 Identify signs of damage or potential damage to pit and cable and take steps to mitigate 6.3 Reinstate site to network owner specifications 6.4 Prepare and finalise reports, including test results and alterations to plans, according to network owner requirements 6.5 Advise client of work completion and obtain sign off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	• Reads and interprets plans, specifications and other documentation from a variety of sources and consolidates information to determine requirements
Writing	• Accurately records and completes organisational

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	documents and correspondence using clear language and correct spelling, grammar and terminology
Oral Communication	• Uses clear language and concepts, and tone and pace appropriate for the audience and purpose
Navigate the world of work	• Complies with explicit policies and procedures • Explores and implements where identified the implicit expectations of policies, procedures and standards
Get the work done	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes • Makes routine decisions and implements standard procedures for routine tasks, using formal decision making processes for more complex and non-routine situations

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTCBL316 Install ribbon fibre cable in the FTTX distribution network (Release 2)	ICTCBL316 Install ribbon fibre cable in the FTTX distribution network (Release 1)	Updates to pre-requisite code. Updates to template to apply consistent format between units.	Equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL316 Install ribbon fibre cable in the FTTX distribution network

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- prepare cable for mid-span splicing – strip and coil
- prepare cable for butt end splicing – strip and coil
- install ribbon fibre cable into:
  - one heat shrink seal enclosure
  - one mechanical seal enclosure
  - one high density ribbon fibre termination drawer
- splice ribbon fibre according to specifications
- observe all network owner requirements and product practices to ensure optimal performance of cable systems
- adapt techniques to a range of technical and environmental conditions.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- applicable network owner standards, specifications and procedures for cable installation
- cable installation requirements, including:
  - causes of signal strength loss in optical fibre

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    - colour coding and numerical coding of fibres
    - application of relevant safe operation of laser instruments
    - installation equipment
- industry and organisational policies and procedures when splicing optical fibre cable
- manufacturer requirements for safe operation of optical fibre equipment
- common hazards associated with the construction site
- work health and safety (WHS) and environmental control processes and responsibilities on worksites
- safe handling of optical fibres and related equipment including:
    - hazards relating to handling of optical fibre and laser light source in the workplace
    - injuries:
        - damage to retina from lasers
        - damage to lungs from inhalation of fibre offcuts and particles
        - needle stick injury from fibres and offcuts
    - laser warning signs and labels relating to optical fibre components and equipment
    - safety requirements when handling and working with:
        - active equipment
        - laser light sources
        - optical fibre connectors
        - optical fibres
        - patch cords
- major feature and use of ribbon fibre, including:
    - bend ratios for ribbon fibre
    - procedures for handling and placing ribbon fibre in enclosures
    - procedures for physical handling of ribbon fibre cables
    - structure of ribbon fibre cables
    - splicing techniques for ribbon fibre
    - types and functions of ribbon fibre enclosures
- risks associated with confined spaces and determine the appropriate responses.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- optic fibre cabling and equipment
- a range of cabinet types and other housings requiring cable-handling techniques
- personal protective equipment
- first aid and fire safety equipment
- ribbon fibre cleaners, stripper and splicer
- joint pressure testing equipment.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL319 Rearrange large size copper cable

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 3.0.

Application

This unit describes the skills and knowledge required to modify a large size cable network or cut over new large size cables in the telecommunications access network. It includes telephony, data security and emergency services within the cable sheath.

It applies to linesworkers, technicians or copper jointers working for carriers, contractors or other service providers who cut over and rearrange large size cable to distribution cabinets and housings.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the Implementation Guide Companion Volume or the relevant regulator for specific guidance on requirements.

Unit Sector

Telecommunications – cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for cable modification and cutover	1.1 Obtain relevant legislation, codes, client practices, regulations and standards for given work

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ELEMENT	PERFORMANCE CRITERIA
	1.2 Obtain project plan from appropriate personnel and use it to scope work 1.3 Arrange for site access according to local government and other authority requirements 1.4 Inspect site to develop a work health and safety (WHS) plan and notify appropriate personnel of identified safety hazards 1.5 Determine cable route and type of cable from project plan, and identify and avoid other services 1.6 Determine large size cable handling and support facilities 1.7 Obtain plant, tools, safety equipment and material to perform tasks safely and efficiently 1.8 Prepare implementation plan with cutover tasks based on identified nature of job and seek client approval, if required 1.9 Notify client and network carrier of proposed cutover details and proposed disruption to services 1.10 Undertake additional preparatory non-jointing work, as required, according to client practices and site conditions 1.11 Coordinate labour required for remote cutover of large size cable
2. Joint and cutover cable	2.1 Follow WHS and environmental requirements for given work 2.2 Notify appropriate personnel of cable pressure and equipment alarms 2.3 Prepare joint enclosure and jointing cabinet for cutover cable entry, jointing activities and entry port enclosure sealing 2.4 Set up jointing machines and jigs for jointing 2.5 Joint cable according to jointing sequence, materials, joint type, location, and client practices and manufacturer's guidelines and to meet service level agreements (SLAs) 2.6 Test cable for performance and rectify any faults relating to cutover according to location, materials available and client practice 2.7 Seal all joints according to cable type, location, and enterprise and manufacturer's guidelines
3. Arrange cables and secure site	3.1 Arrange cables in jointing chamber or cabinet according to client practices 3.2 Recover obsolete materials and return to appropriate point for disposal 3.3 Restore site according to client practices and other authority requirements

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ELEMENT	PERFORMANCE CRITERIA
4. Complete project documentation	4.1 Complete reports on cutover installation, and design amendments to reflect existing cable layout, according to client practices 4.2 Notify appropriate personnel of completion of cutover and obtain sign off

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	• Interprets plans, specifications and other documentation from various sources • Consolidates information to determine requirements • Analyses test results and data from a range of sources against defined criteria and requirements
Writing	• Documents outcomes and changes to plans using industry relevant terminology and recognised plan symbols • Prepares documentation and correspondence using clear language and correct spelling and terminology
Oral Communication	• Interacts effectively in verbal exchanges using appropriate language, listening and questioning skills to convey and clarify information
Numeracy	• Make calculations required for measuring and estimating materials for construction • Performs mathematical calculations to check, interpret and confirm results of system tests
Navigate the world of work	• Complies with policies, procedures and legislative requirements relevant to own role
Interact with others	• Uses appropriate practices and protocols to communicate effectively with colleagues, clients and others
Get the work done	• Plans, sequences and carries out tasks according to meet required outcomes • Analyses task requirements to decide on appropriate equipment and practices • Uses problem solving processes to address less predictable problems, referring to standard procedures

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	to determine solutions

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTCBL319 Rearrange large size copper cable (Release 2)	ICTCBL319 Rearrange large size copper cable (Release 1)	Updates to performance criteria and knowledge evidence. Updates to template to apply consistent format between units.	No equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL319 Rearrange large size copper cable

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 3.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- obtain and use information to prepare a plan to implement cutover tasks
- obtain all resources required to carry out cutover tasks
- implement plan including:
  - preparing jointing cabinets and chambers for cutover
  - preparing, entering and sealing new cables to large size joint enclosures
  - using jointing machines and jigs for jointing
  - conducting tests to determine success of cutover
  - interpreting results and rectifying faults occurring as a result of cutover
  - sealing joints and restoring alarms
- comply with all related health and safety requirements, client and work practices
- complete and store required project documentation.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- common cabling types, connectors and cabling structures
- use of colour for identification of cables

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- legislation, codes of practice and other formal agreements that impact on the work activity
- equipment used for the work activity and the manufacturer's requirements for safe operation
- cutover of large size cable and client equipment
- health and safety concerns relevant to the work activity
- cable performance test requirements
- equipment, including operating requirements, used to test cable
- issues and challenges that occur on worksites, and how to address them
- warranties and service level agreements (SLAs).

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- systems and equipment required for cutover activities
- installation equipment currently used in industry
- regulatory and equipment documentation that impacts on work activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL320 Jumper metallic conductor cable in the access network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 3.0.

Application

This unit describes the skills and knowledge required to jumper metallic conductor cable in access network cabinets or exchange distribution frames. It applies to new or existing jumpering for upgrades or network cabling rearrangements for convergence to next generation networks (NGN).

It applies to linesworkers, technicians or jointers who carry out technical roles involving indoor and outdoor distribution frame jumpering. All jumpering in access network distribution cabinets must be conducted by workers who have been authorised by the network owner or carrier to undertake the work involved.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the Implementation Guide Companion Volume or the relevant regulator for specific guidance on requirements.

Unit Sector

Telecommunications – cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare cabinet and termination frame for	1.1 Arrange access according to customer and individual worksite requirements

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ELEMENT	PERFORMANCE CRITERIA
jumpering	1.2 Set up work site to ensure public safety and to comply with utility provider, local, state and commonwealth requirements 1.3 Inspect site to develop work health and safety (WHS) plan and notify appropriate personnel of identified safety hazards 1.4 Prepare for cable jumpering work observing client practices, cable type, termination systems, earthing and protection and relevant legislative requirements 1.5 Select correct jumpering activities for installation according to client practices 1.6 Identify remote power feeding services that operate at above telecommunications network voltage (TNV) and special services that terminate in the cabinet of housing 1.7 Take necessary precautions to work safely with network voltages and minimise service disruption to special services 1.8 Remove all contaminants from worksite that may adversely affect jumpering and prepare worksite to ensure adequate visibility to minimise errors and reduce eye strain 1.9 Plan block locations following client practices within the frame and allow for capacity to expand jumpering where possible
2. Jumper terminal blocks on frame	2.1 Install terminating modules to frame according to manufacturer's specifications 2.2 Set up jumpering reel near source terminal block and draw jumper through frame 2.3 Terminate jumper to block and return, cut and terminate source end of jumper 2.4 Identify and label jumpers according to client practices 2.5 Install over-voltage protection devices to all cables with metallic component where required 2.6 Earth cable shield to manufacturer's specifications and industry standards
3. Test jumpering and seal closure	3.1 Conduct visual inspection to confirm that jumper is not kinked or jammed 3.2 Test termination to satisfy performance specifications and record results if required 3.3 Close housing, seal and re-pressurise where necessary
4. Complete records and restore site	4.1 Update records and plans accurately with cabling details according to industry codes of practice and current Australian standards

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ELEMENT	PERFORMANCE CRITERIA
	4.2 Remove installation waste and debris from worksite and dispose of according to environmental requirements to maintain safe worksite conditions 4.3 Notify appropriate personnel about completion of job and obtain sign off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.4, 2.1, 2.4, 2.6, 3.2, 4.1	• Interprets textual information from relevant sources to identify relevant and key information
Writing	1.3, 2.4, 3.2, 4.1, 4.3	• Uses clear, specific and industry related terminology to complete workplace documentation
Oral communication	1.1, 1.3, 4.3	• Interacts effectively in verbal exchanges using appropriate language, listening and questioning skills to convey and clarify information
Numeracy	1.4, 1.6, 2.1, 2.6, 3.2, 4.1	• Takes readings and measurements and interprets results
Navigate the world of work	1.1, 1.2, 1.3, 1.4, 1.7, 1.8, 2.5, 2.6, 4.1, 4.2	• Complies with policies, procedures and legislative requirements relevant to own role
Interact with others	1.1, 1.3, 4.3	• Identifies and follows accepted communication practices and protocols when liaising with clients, colleagues and others
Get the work done	1.1, 1.4, 1.5, 1.6, 1.9, 2.1, 3.1, 3.2, 4.1, 4.3	• Plans, sequences and carries out tasks to meet required outcomes • Analyses task requirements to decide on appropriate equipment and practices

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status

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Code and title current version	Code and title previous version	Comments	Equivalence status
ICTCBL320 Jumper metallic conductor cable in the access network	Not applicable	New unit to address industry skill needs.	No equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL320 Jumper metallic conductor cable in the access network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 3.0.

Performance Evidence

Evidence of the ability to:

- plan and prepare for jumpering activity including:
  - arranging safe access to site
  - identifying special services and remote power feeds a
  - following appropriate procedures
- carry out jumpering activity including:
  - populate terminal frames with new terminal blocks where necessary
  - running jumpers through frame and terminate jumper to terminal blocks
  - using correct methods to terminate a range of jumpers
  - conducting tests and interpreting cable test results for several different types of lead-in faults
  - interpreting and applying relevant legislative requirements
- finalise jumpering activity including:
  - updating records and plans to show cable locations
  - restoring site to required condition
  - obtaining final sign off.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- list the termination tools required for the work activity and explain how to operate them according to safety and manufacturer's guidelines
- describe the features and operating requirements of testing equipment

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- describe the process used to install and maintain cabling products according to manufacturer's guidelines
- outline legislation, codes of practice and other formal agreements that impact on the work activity
- describe specific work health and safety requirements relating to the activity and site conditions
- explain termination methods and performance requirements for jumpering activity
- describe typical issues and challenges that occur on site and how to address them.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – cabling field of work and include access to:

- sites where metallic conductor cable may be terminated
- colour codes for visual inspections or wire-mappers for 4 pair cable tests
- regulatory and cabling documentation that impacts on cable terminating activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL401 Prepare design drawings and specification for a cable installation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to prepare design drawings and specification for indoor or outdoor, domestic, commercial or industrial cable installations for communications applications compliant with appropriate Australian Communications and Media Authority (ACMA) technical standards.

It applies to technical staff who prepare design drawings and specifications for digital and analog, telephony, data, video, digital broadcasting, computer networks, local area networks (LAN), wide area networks (WAN) and multimedia cable communication installations on a client's premises.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the Implementation Guide Companion Volume or the relevant regulator for specific guidance on requirements.

Unit Sector

Telecommunications – cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Gather information on existing and proposed	1.1 Confirm cable installation requirements with client 1.2 Inspect site to confirm building plans where possible

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ELEMENT	PERFORMANCE CRITERIA
installation	1.3 Review existing cable plans and drawings
2. Determine installation options	2.1 Assess available installation options against client requirements and relevant legislation, codes, regulations and standards 2.2 Establish and assess cost of options against client's budget 2.3 Select most suitable option based on function and cost considerations, and present to client
3. Prepare suitable drawings	3.1 Prepare clear and accurate cable installation drawings indicating proposed outlets and services 3.2 Provide drawings to relevant parties and file copies for later reference according to company policies
4. Prepare cabling specifications	4.1 Prepare detailed cabling specifications for cabling system 4.2 Prepare accurate costing from detailed specification, including equipment and material required
5. Verify specifications with client	5.1 Verify prepared documentation with client 5.2 Obtain authorisation and sign off from client to proceed according to company policy

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.3, 2.1-2.3	• Analyses complex documentation from a variety of sources • Interprets and checks completeness and accuracy of information and data • Evaluates information and products from a variety of sources to ensure appropriateness for client needs
Writing	1.1, 2.3, 3.1, 4.1, 4.2, 5.1, 5.2	• Writes, edits and proofreads plans and documents to ensure clarity of meaning, accuracy and consistency of information • Records client information and completes organisational documents and correspondence using clear language and correct spelling, grammar and terminology

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Oral Communication	1.1, 2.3, 5.1, 5.2	• Use active listening and questioning to clarify requirements
Numeracy	1.2, 1.3, 2.1-2.3, 3.1, 4.1, 4.2	• Performs mathematical calculations to check, interpret and confirm information for design specifications and drawings • Makes calculations appropriate for measuring, estimating materials and costs
Navigate the world of work	2.1, 5.2	• Takes full responsibility for following policies, procedures and legislative requirements and identifies organisational implications of new legislation or regulation on design parameters
Interact with others	1.1, 2.3, 3.2, 5.1, 5.2	• Selects and uses appropriate communication practices with others
Get the work done	1.1, 1.2, 2.1, 2.3, 3.2	• Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others and taking into account capabilities, efficiencies and effectiveness • Monitors progress of plans and schedules, and reviews and changes them to meet new demands and priorities

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTCBL401 Prepare design drawings and specification for a cable installation	ICTCBL4002A Prepare design drawings and specification for a cable installation	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL401 Prepare design drawings and specification for a cable installation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- determine installation requirements and options
- produce schematic and floor plan drawings based on design parameters
- produce specifications based on design drawings
- verify design drawings and specifications with client
- produce a costing of the design and specifications.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- recognise and apply the Australian Communications and Media Authority (ACMA) regulation requirements for Telecommunications Cabling Provider Rules in the design
- recognise and apply legislation, codes of practice and other formal resources that impact on the design
- recognise and apply industry recognised drafting principles and standards
- identify key features and operating requirements of resources and equipment required for the client cable installation
- identify and include the manufacturer’s performance specifications for equipment and consumables in the design
- assess health and safety requirements relating to the design.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – cabling field of work and include access to:

- sites where cable installation may be conducted
- equipment currently used in industry
- relevant regulations, company policies and cabling specifications that impact on cable installation activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL402 Schedule and supply cabling installation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to schedule and supply indoor and outdoor, domestic, commercial or industrial communications cabling installations. Communications applications include digital and analog, telephony, data, video, digital broadcasting, computer networks, local area networks (LAN), wide area networks (WAN) and multimedia.

It applies to technical staff who schedule and supply cabling installations appropriate to Australian Communications and Media Authority (ACMA) rules.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the Implementation Guide Companion Volume or the relevant regulator for specific guidance on requirements.

Unit Sector

Telecommunications – cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Schedule supply and installation events	1.1 Confirm cabling installation requirements and project specifications from client 1.2 Prepare work schedules and installation plans, identifying key dates and milestones

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ELEMENT	PERFORMANCE CRITERIA
	1.3 Obtain information on location of other services from relevant authorities 1.4 Prepare schedule of material supplies to be available when required for installation
2. Monitor and adjust supply requirements	2.1 Adjust labour load variations to meet installation needs to enable completion within budget and timeframes 2.2 Prepare quote and confirm additional work requests with client prior to commencement 2.3 Monitor work progress against project schedules and budgets 2.4 Monitor compliance regularly with client specifications, licensing, relevant legislation, codes, regulations and standards 2.5 Prepare report detailing project scheduling and supply requirements

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.3, 2.3, 2.4	• Analyses plans and other documentation from a variety of sources • Interprets and checks completeness and accuracy of information and data
Writing	1.2, 1.4, 2.1, 2.5	• Prepares a range of documents using appropriate language and organisational formats
Oral Communication	1.1, 1.3, 2.2	• Uses appropriate language for audience and context • Uses questioning and listening skills to clarify requirements
Numeracy	1.1, 1.2, 1.4, 2.1-2.3	• Make calculations appropriate for measuring and estimating materials for construction • Performs mathematical calculations to analyse labour, costs and quantities to accurately process quotations • Interprets and manipulates numerical information relating to targets and timelines
Navigate the	2.4	• Takes full responsibility for following policies, procedures and legislative requirements, and identifies

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world of work		organisational implications of new legislation or regulation
Interact with others	1.1, 1.3, 2.2	• Implements strategies for a diverse range of colleagues and clients to build rapport and foster strong relationships
Get the work done	1.1, 1.2, 2.1, 2.3, 2.4	• Plans and sequences complex tasks and workload, negotiating key aspects with others and taking into account capabilities, efficiencies and effectiveness • Applies systematic and analytical decision making processes for complex and non-routine situations • Monitors progress of plans and schedules, and reviews and changes them to meet new demands and priorities

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTCBL402 Schedule and supply cabling installation	ICTCBL4004A Schedule and supply cabling installation	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL402 Schedule and supply cabling installation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- plan and provide appropriately skilled labour, volume and type of material to meet key dates and milestones for installations
- identify labour and material sources and negotiate with contractors, suppliers and other service providers to meet installation deadlines
- monitor work progress and adjustment of resource requirements to meet both client's needs and costing parameters in installations.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe appropriate methods for scheduling labour and resources
- recognise the requirements to safely operate equipment and install components according to a manufacturer's specification
- outline the work health and safety (WHS) standards and practices required to:
  - manage risk and hazards in the workplace
  - use health and safety standards
  - work systematically with required attention to detail without injury to self or others
- identify and describe legislation, codes of practice and other formal agreements that impact on the work activity
- identify typical issues and challenges that occur in scheduling work and overseeing a worksite.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – cabling field of work and include access to:

- sites and equipment where cabling installation may be conducted
- relevant regulatory and equipment documentation that impacts on installation activities
- organisational policies and procedures for documenting schedules.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL403 Supervise cabling project

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to supervise an indoor or outdoor, domestic, commercial or industrial communications cabling project. It requires planning, preparing financial budgets and monitoring cabling work. Communications applications include digital and analog, telephony, data, video, digital broadcasting, computer networks, local area networks (LAN), wide area networks (WAN) and multimedia.

It applies to technical staff who supervise a cabling project on a client's premises where technical and organisational skills are required to ensure an effective outcome for the client.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the Implementation Guide Companion Volume or the relevant regulator for specific guidance on requirements.

Unit Sector

Telecommunications – cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan and organise cabling activities	1.1 Obtain cabling installation specifications and project specifications from client 1.2 Prepare work schedules and installation plans identifying key dates and milestones

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ELEMENT	PERFORMANCE CRITERIA
	1.3 Organise resource requirements 1.4 Verify location of proposed installation according to plans obtained from authorised personnel 1.5 Obtain information on location of other services from relevant authorities 1.6 Document plans for cabling project and advise relevant parties
2. Prepare financial budgets	2.1 Prepare budget identifying *c*ost and expenditure items from scheduling and planning documentation 2.2 Advise relevant personnel of purchasing and other delegations within budget allocations 2.3 Prepare budget projections within estimated and approved contract pricing
3. Source human resource requirements for cabling	3.1 Estimate number and determine availability of suitable human resources according to contract requirements and relevant industrial and enterprise policy 3.2 Establish necessary competency and licence requirements of project personnel prior to recruitment 3.3 Schedule personnel workloads and allocate within industrial and enterprise requirements
4. Monitor cabling works	4.1 Follow work health and safety (WHS) processes and site-specific safety requirements according to plan 4.2 Monitor compliance regularly with client specification, relevant legislation, codes, regulations and standards 4.3 Notify client promptly on difficult or known problem areas 4.4 Reallocate work as required to meet client and company requirements 4.5 Monitor costs and time schedules to identify and resolve any potential problem 4.6 Provide report on work progress activity and schedule
5. Evaluate outcomes of cabling projects	5.1 Review cabling projects to identify areas where performance has been below client and enterprise expectations 5.2 Implement recommendations to ensure effective improvements
6. Complete administrative tasks	6.1 Complete documentation 6.2 Notify client and obtain sign off

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.3-1.5, 2.1	• Critically analyses complex documentation from a variety of sources • Checks completeness and accuracy of information and data
Writing	1.2, 1.6, 2.1, 2.3, 3.3, 4.3, 4.6, 6.1, 6.2	• Completes organisational documents and correspondence using clear language and correct spelling, grammar and terminology • Documents outcomes and changes to schedules using industry relevant terminology and symbols • Writes, edits and proofreads documents to ensure clarity of meaning, accuracy and consistency of information
Oral Communication	1.1, 1.6, 2.2, 4.3, 4.6, 6.2	• Participates in verbal exchanges using collaborative and inclusive techniques including active listening and questioning to convey and clarify information • Presents complex information using clear and convincing language, tone and pace appropriate for the audience and purpose
Numeracy	1.2-1.5, 2.1-2.3, 3.1, 3.3, 4.5	• Interprets and manipulates numerical information relating to targets and timelines • Make calculations appropriate for measuring and estimating materials for installation work • Performs mathematical calculations to analyse labour, costs and quantities to accurately produce quotations and budgets
Navigate the world of work	3.1-3.3, 4.1, 4.2, 4.4	• Takes full responsibility for following policies, procedures and legislative requirements, and identifies the organisational implications of new legislation or regulation • Identifies and acts on issues that contravene relevant policies, procedures and legal requirements
Interact with others	1.1, 1.6, 2.2, 4.3, 6.2	• Implements strategies for a diverse range of colleagues and clients to build rapport and foster strong relationships • Collaborates with others, sharing information to build strong work groups and avoid behaviours that are not conducive to a productive environment • Manages conflict in the workplace through the recognition

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		of contributing factors and by implementing strategies to resolve conflict
Get the work done	1.2-1.6, 3.2, 4.2, 4.4, 4.5, 5.1, 5.2	• Accepts responsibility for planning, sequencing and monitoring complex tasks and workload, negotiating key aspects with others and taking into account capabilities, efficiencies and effectiveness • Responds to problems requiring immediate resolution, drawing on past experiences

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTCBL403 Supervise cabling project	ICTCBL4023A Supervise cabling project	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL403 Supervise cabling project

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- complete all appropriate plans and financial budgets for cabling activities
- supervise cabling project applying human resource policies, including awards and conditions and all related health and safety and work practices
- monitor and implement alternate plans where necessary to meet work schedules and client requirements
- complete a project report on a cabling project detailing recommendations for improvement.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe appropriate methods for scheduling, costing and managing labour and resources on a project
- recognise the requirements to safely operate equipment and install components according to a manufacturer's specification
- outline the health and safety standards and practices required to:
  - manage risk and hazards in the workplace
  - use health and safety standards
  - work systematically with required attention to detail without injury to self or others
- identify and describe legislation, codes of practice and other formal agreements that impact on the work activity
- identify typical issues and challenges that occur in scheduling and supervising a worksite
- outline the components of reports and identify the reasons for other documentation required when supervising a project.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – cabling field of work and include access to:

- a site with a cabling project
- human resource policies, including awards, conditions and all related work health and safety (WHS) and work practices
- relevant regulatory and equipment documentation that impacts on monitoring activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL404 Test cable bearers

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to test cable bearers. It involves setting up, testing and interpreting test results and determining appropriate action for all cable types (metallic, optical fibre and coaxial).

It applies to technicians and line installers whose work involves testing cable bearers for connections, signal strength or loss of cable links on client cable and service provider networks, in accordance with manufacturer's and design specifications.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the Implementation Guide Companion Volume or the relevant regulator for specific guidance on requirements.

Unit Sector

Telecommunications – cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare and set up for cable test	1.1 Obtain relevant legislation, codes, regulations and standards 1.2 Scope work by obtaining project plan from appropriate personnel and arrange for site access to comply with security arrangements 1.3 Notify appropriate personnel of identified safety hazards at worksite

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Determine type of cable bearer and cable route from project plan and identify test requirements using work instructions 1.5 Obtain tools and safety equipment and material to perform tasks safely and efficiently 1.6 Select and use required protective equipment and make site safe and secure for testing work 1.7 Determine need for outage, extent, location and timing, if required, and negotiate with appropriate personnel 1.8 Select and set up suitable test equipment according to manufacturer's specifications for cable tests to be performed to ensure relevance of test data 1.9 Ensure equipment calibration certification is current to reduce possibility of unreliable test data and ensure traceability
2. Perform cable tests	2.1 Follow work health and safety (WHS) and environmental requirements for given work, and identify and avoid other services 2.2 Determine and record cable parameters for consideration in assessment of performance 2.3 Conduct performance tests as required by both equipment and enterprise specification for specific cable type and purpose
3. Interpret test results and determine action	3.1 Record test results for evaluation and compare against manufacturer's and site specifications 3.2 Analyse test results and evaluate cable performance with consideration of recorded cable parameters 3.3 Diagnose problems to determine cable faults and make arrangements for repairs or modifications 3.4 Retest faulty cable after faults have been rectified
4. Document test results and clean up site	4.1 Produce evaluated test results according to enterprise guidelines and without delay to ensure test results remain current 4.2 Update site and installation files to ensure traceability of information on system performance is maintained 4.3 Archive test record details for life of cable according to enterprise guidelines 4.4 Remove waste and debris from worksite and dispose of according to environmental requirements 4.5 Notify appropriate personnel of job completion and obtain sign off

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 1.4, 1.6-1.9, 2.1, 3.1	• Analyses and consolidates information and data from a range of sources, against defined criteria and requirements, and checks for accuracy and completeness
Writing	1.2, 2.2, 3.1, 4.1, 4.2, 4.5	• Records information and prepares correspondence and documentation using clear language and organisational formats and protocols • Records information in organisational systems
Oral Communication	1.2, 1.3, 1.7, 3.3, 4.5	• Conveys and clarifies information effectively to a range of personnel using active listening, questioning and reading of verbal and non-verbal signals • Presents complex information in formal situations using clear and convincing language, tone and pace appropriate for the audience and purpose
Numeracy	2.3, 3.1-3.4, 4.1	• Performs mathematical calculations to check, analyse, interpret and confirm results of system tests
Navigate the world of work	1.1, 1.4, 2.1, 2.3, 4.1, 4.3, 4.4	• Takes full responsibility for following policies and procedures • Identifies and resolves key variations to standard procedures identified from conducting tests
Interact with others	1.2, 1.3, 1.7, 4.5	• Uses a range of strategies to establish a sense of connection and build rapport with clients and co-workers
Get the work done	1.2, 1.4-1.9, 2.1-2.3, 3.1, 3.3, 3.4, 4.1-4.4	• Plans and sequences complex tasks and workload, negotiating key aspects with others and taking into account capabilities, efficiencies and effectiveness • Makes critical decisions quickly and intuitively in complex situations, taking into consideration a range of variables including the outcomes of previous tests • Applies systematic and analytical decision making processes for complex and non-routine situations

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTCBL404 Test cable bearers	ICTCBL4057A Test cable bearers	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL404 Test cable bearers

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- perform tests on cable bearers
- use a range of tests
- interpret test results
- rectify a range of faults
- report on the completed tests
- comply with all related health and safety requirements and work practices.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe the features, operation and specifications of test equipment
- identify a range of tests performed on cable bearers
- describe codes of practice and standard procedures that apply to cable bearers
- list common cable bearer faults and describe how to rectify them
- specify health and safety requirements relating to use and operation of test equipment
- outline the components of reports and identify the reasons for other documentation required when conducting tests.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – cabling field of work and include access to:

- sites where testing may be conducted

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- cabling and equipment currently used in industry
- relevant regulatory and equipment documentation that impacts on testing cable bearers.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCBL405 Remotely locate and identify cable network faults

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to remotely locate and identify cable network faults in voice, video and data telecommunications applications using metallic and optical fibre cables.

It applies to technicians who are required to locate telecommunications cable faults in access networks. This may be done at a centralised testing office and make use of computer test routines and databases.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the Implementation Guide Companion Volume or the relevant regulator for specific guidance on requirements.

Unit Sector

Telecommunications – cabling

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Verify fault report	1.1 Locate source of fault using available information and contacts to verify nature of fault as reported 1.2 Perform preliminary operational testing according to type of fault presentation, fault environment and enterprise guidelines to verify nature of fault

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ELEMENT	PERFORMANCE CRITERIA
	1.3 Analyse historical data to identify possible causes and solutions
2. Conduct remote testing to diagnose network fault	2.1 Evaluate cable fault details and plan strategy to conduct remote testing 2.2 Conduct appropriate remote diagnostic test to isolate and diagnose network fault 2.3 Determine urgency and impact of fault and identify required response time frame 2.4 Evaluate diagnostic tests to determine type, location and nature of network fault
3. Dispatch fault-finding field personnel	3.1 Prepare fault report and forward to appropriate staff according to enterprise guidelines 3.2 Notify fault centre and arrange for dispatch of technician to rectify fault 3.3 Notify client of fault progress and arrange for fault clearance time

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.3, 2.1, 2.4	• Analyses and consolidates information and data from a range of sources, against defined criteria and requirements, and checks for accuracy and completeness
Writing	2.1, 3.1-3.3	• Prepares a range of textual information appropriate for the audience and for informal and formal purposes
Oral Communication	1.1, 3.1-3.3	• Interacts effectively in verbal exchanges, using active listening and questioning, to convey and clarify information
Numeracy	1.2, 1.3, 2.2-2.4	• Takes measurements and performs mathematical calculations to check, interpret and confirm results of system tests
Navigate the world of work	1.2	• Takes full responsibility for following policies, procedures and legislative requirements

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Interact with others	1.1, 3.1-3.3	• Collaborates with and implements strategies for a diverse range of colleagues and clients to build rapport, foster strong relationships and achieve outcomes
Get the work done	1.1-1.3, 2.1-2.4, 3.3	• Plans and sequences complex tasks and workload, negotiating key aspects with others and taking into account capabilities, efficiencies and effectiveness • Applies systematic and analytical decision making processes for complex and non-routine situations • Uses digital technologies and systems to access information, research and diagnose faults

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTCBL405 Remotely locate and identify cable network faults	ICTCBL4099A Remotely locate and identify cable network faults	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCBL405 Remotely locate and identify cable network faults

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- methodically approach fault identification
- conduct tests appropriate to the type of fault identified
- interpret test results
- provide instructions to staff engaged in on-site repair.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe the features and operating requirements of test equipment
- identify appropriate tests to be performed
- describe the legislation, codes of practice and standard procedures for cable network faults
- specify health and safety requirements relating to fault finding in cable networks
- identify typical issues and challenges that occur when performing remote tests and fault finding.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – cabling field of work and include access to:

- sites where remote investigation of cable network faults may be conducted
- fault-finding equipment currently used in industry
- relevant documentation that impacts on cable network and fault-finding activities.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCMP201 Organise and monitor cabling to ensure compliance with regulatory and industry standards

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to organise teams undertaking cabling work on all cable types, and to ensure compliance with regulatory and industry standards.

It applies to technical staff supervising teams within a customer premises and ensuring compliance with the Australian Communications and Media Authority (ACMA) and industry standards. They may make use of formal documentation, such as accurate completion of a telecommunications cabling advice (TCA) form (TCA1 form), test routines and databases.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Compliance

Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Organise cabling work activity	1.1 Arrange access to site according to required procedure 1.2 Make worksite safe by identifying and controlling hazards 1.3 Review site plans and documentation

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	1.4 Organise supply of cable, equipment, tools and materials in line with customer and manufacturer's specifications 1.5 Schedule and allocate work 1.6 Establish communication protocols and processes
2. Monitor work activity	2.1 Manage remote power feed following workplace health and safety (WHS) and environmental requirements 2.2 Monitor work activity to ensure it meets site specifications, enterprise requirements, and relevant legislation, codes, regulations and standards 2.3 Reallocate work as needed
3. Complete records and obtain sign off	3.1 Complete required records 3.2 Ensure installation waste and debris is removed from worksite and disposed of according to environmental requirements to maintain safe worksite conditions 3.3 Ensure site is reinstated according to customer and company requirements 3.4 Notify customer and obtain sign off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.3, 1.4, 3.3	• Reads and interprets plans, specifications and other documentation from a variety of sources and consolidates information to determine requirements
Writing	1.1, 1.6, 3.1, 3.4	• Prepares workplace documentation and correspondence using clear language, correct spelling and accurate terminology
Oral Communication	1.1, 1.6, 3.4	• Uses everyday language to provide information or maintain a conversation in familiar spoken contexts
Numeracy	1.3, 2.2	• Makes calculations appropriate for measuring and estimating materials
Navigate the world of work	1.1, 1.6, 2.1, 2.2, 3.2, 3.3	• Follows clear instructions within defined level of responsibility • Recognises organisational expectations and follows explicit protocols and procedures

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		• Seeks clarification when required
Interact with others	1.6, 2.3, 3.4	• Follows instructions regarding what and how to communicate following predetermined scripts • Recognises common differences in other people and implements basic strategies to address own reaction to these differences
Get the work done	1.1, 1.2, 1.4, 1.5, 2.1-2.3, 3.2, 3.3	• Follows clearly defined instructions and sequencing, and monitors own progress for the task, seeking assistance when necessary • Responds to highly obvious routine problems using step-by-step instruction and procedures or a trial and error process for non-critical situations • Uses digital technologies following strict instructions to enter and retrieve data

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTCMP201 Organise and monitor cabling to ensure compliance with regulatory and industry standards	ICTCMP2022B Organise and monitor cabling to ensure compliance with regulatory and industry standards	Updated to meet Standards for Training Packages Code change	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCMP201 Organise and monitor cabling to ensure compliance with regulatory and industry standards

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- organise, schedule and establish communication protocols for cabling work
- monitor work activity and reallocate as required to meet specifications, work health and safety (WHS) and ensure compliance with relevant regulations and standards
- ensure cabling work is completed and records are maintained.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete unit requirements safely and effectively, the individual must:

- describe and explain Australian Communications and Media Authority's (ACMA) Competency Requirements for Telecommunications Cabling Provider Rules, legislation, codes of practice and other formal agreements that impact work activity
- describe and explain cable installations
- list features and operating requirements of test equipment
- describe and explain information required to operate equipment according to a test specification
- explain manufacturer’s requirements for safe operation of equipment
- identify specific work health and safety (WHS) requirements relating to activity and site conditions
- describe test methods and performance requirements
- identify and explain typical issues and challenges that occur on site.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications – Compliance field of work and include access to:

- sites where staff monitoring may be required
- supervision rules
- use of tools, materials and equipment currently used in industry
- relevant regulatory and equipment documentation that impact work activities.

Note: Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Refer to the ICT Implementation Guide Companion Volume for recommended assessor details.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTCMP501 Undertake radio communications site audit

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to undertake a radio communications site audit regarding compliance of radio frequency (RF) transmissions with relevant transmitter licence requirements.

It applies to individuals who may be field officers from regulatory authorities or other private and public organisations. They combine technical radio communications skills with broader organisational and administrative skills to conduct audits in a range of commercial and community contexts and environments, make recommendations for improvement and follow up by monitoring resulting actions.

Work functions in occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Unit Sector

Telecommunications – Compliance

Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for radio	1.1 Confirm need for site audit through appropriate triggers and arrange formal approval for site access from authorised personnel

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communications site audit	1.2 Clarify audit requirements according to relevant legislation, codes, regulations and standards, including safety and security arrangements, and action required to comply 1.3 Clarify audit requirements with client or project originator, where appropriate, and incorporate broader audit considerations 1.4 Prepare a hardcopy of site information for use as an audit validation list at site 1.5 Specify staff, equipment and material resource requirements for audit, based on particular site requirements ensuring equipment has been correctly calibrated and labelled 1.6 Check industry requirements for site and obtain industry licence where appropriate
2. Undertake radio communications site audit	2.1 Validate specific site location according to database information 2.2 Undertake audit tasks according to work health and safety (WHS), enterprise procedures and site specific safety requirements, and meet client or representative on site as required 2.3 Conduct transmission and radio frequency (RF) tests against approved specifications 2.4 Conduct check of transmitters for licensing conditions 2.5 Check transmission radio frequency against database list and obtain permission to check or alter transmission or radio frequency where appropriate 2.6 Confirm site meets specific RF WHS requirements and licensing requirements where appropriate 2.7 Confirm defined site equipment labelling comply with Australian Communications and Media Authority (ACMA) technical standards
3. Complete audit administration tasks	3.1 Update or arrange for update of required records regarding audit findings and action required, including liaison with authorised personnel as agreed 3.2 Monitor recommended actions to ensure compliance with findings 3.3 Issue enforcement actions as required 3.4 Finalise audit administration and return equipment and resources according to organisational procedures

Foundation Skills

This section describes the language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

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Skill	Performance Criteria	Description
Reading	1.1-1.3, 2.1, 2.3, 2.5, 2.7, 3.2	• Critically analyses documentation from a variety of sources and records and consolidates information to determine requirements
Writing	1.1, 1.3, 1.4, 3.1, 3.3	• Accurately records and completes organisational documents and correspondence using clear language and correct spelling, grammar and terminology
Oral Communication	1.1,1.3, 2.2, 3.1, 3.2	• Presents complex information in formal situations using clear and convincing language, tone and pace appropriate for the audience and purpose
Numeracy	1.4, 2.3, 2.4, 2.5, 2.6	• Performs mathematical calculations to interpret complex tests results and information • Analyses and synthesises highly embedded mathematical information in a broad range of tasks and texts
Navigate the world of work	1.2, 1.6, 2.2, 2.4, 2.6, 2.7, 3.4	• Takes full responsibility for following policies, procedures and legislative requirements and identifies organisational implications of new legislation or regulations • Identifies and resolves key business issues, processes and practices that may have legal implications
Interact with others	1.1, 1.3, 1.5, 3.1, 3.3	• Collaborates with others sharing information to build strong work groups and avoid behaviours that are not conducive to a productive environment • Selects, implements and seeks to improve protocols governing communications to clients and co-workers in a range of work contexts
Get the work done	1.2, 1.5, 1.6, 2.2-2.7, 3.2, 3.4	• Accepts responsibility for planning and sequencing complex tasks and workloads, negotiating key aspects with others, and taking into account capabilities, efficiencies and effectiveness • Monitors progress of plans and schedules and reviews and changes them to meet new demands and priorities • Applies systematic and analytical decision-making processes for complex and non-routine situations • Responds intuitively to problems requiring immediate resolution, drawing on past experiences to focus on the cause of a problem rather than the symptom

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTCMP501 Undertake radio communications site audit	ICTCMP5176A Undertake radio communications site audit	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTCMP501 Undertake radio communications site audit

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- determine the need for a site audit and gain access approvals
- conduct radio communications site audit for at least three sites with differing licensing requirements
- conduct transmission and radio frequency (RF) tests
- monitor non-compliances to ensure actions completed
- document enforcement actions.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain features and functions of test equipment including:
  - digital radio communications measuring equipment
  - modulation analyser
  - power meter
  - RF termination
  - spectrum analyser
- describe the features of licensing databases
- describe information required to prepare and conduct telecommunications audits
- explain legislation, licensing requirements for transmitters, codes of practice and other formal agreements that directly impact radio communications site audits
- give an overview of transmission lines, transmitter and receiver architecture and their impact on radio communications audits

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- list required field measurements including:
  - carrier frequency
  - harmonics
  - intermodulation distortion (IMD) products
  - modulation
  - RF power
- explain specific issues related to antenna installations and their impact on radio communications interference
- explain specific work health and safety (WHS) requirements that impact the conduct of radio communications audits, including:
  - use of equipment
  - use of RF protective equipment
  - other personal protective equipment
- explain types of adjustments that need to be made to audit procedures to meet requirements of particular sites and environmental conditions
- typical issues and challenges that occur in telecommunications site audit and how these may be addressed.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications – Compliance field of work and include access to:

- sites on which audits may be conducted
- use of field measurement equipment currently used in industry
- relevant databases, licensing requirements and other site related documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTDBS407 Monitor physical database implementation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to undertake database-management system modelling and to monitor database performance.

It applies to database support staff required to test and scrutinise the operation of a physical database, in order to ensure that it functions as efficiently as possible.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Database

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Undertake database management system modelling	1.1 Review the database prototype as appropriate, to determine the acceptance criteria and performance standards 1.2 Load the test data according to the technical sequence detailed in the relevant documentation 1.3 Generate a test schedule for the database, of tasks to be performed and the results expected
2. Monitor database performance	2.1 Evaluate database performance against the acceptance criteria and performance standards

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Identify discrepancies in the results, when the expected outcomes do not meet the acceptance criteria 2.3 Identify areas needing enhancement, and document the changes to be made 2.4 Modify the database according to project standards 2.5 Repeat performance testing until the expected results are achieved
3. Seek client feedback and sign-off	3.1 Present test results in a document, and provide to the client for feedback 3.2 Incorporate client change requests as appropriate 3.3 Obtain client sign-off to the monitoring process

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 2.1-2.3, 3.2	• Analyses and interprets textual information to establish performance requirements and discrepancies
Writing	1.3, 2.3, 3.1	• Uses appropriate language, layout and format in logically presenting technical data and other information
Oral Communication	1.1, 3.1-3.3	• Listens, and participates, in oral exchanges in order to effectively identify and confirm requirements • Presents information using appropriate and effective language in order to convey information
Get the work done	1.1-1.3, 2.1-2.5	• Sequences and schedules complex activities, monitors implementation, and manages relevant communication • Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information, and identifying and evaluating options against the agreed criteria • Applies key principles and concepts underpinning the design and operation of digital systems, and tools

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Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTDBS407 Monitor physical database implementation	ICADBS407A Monitor physical database implementation	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTDBS407 Monitor physical database implementation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- identify technical considerations affecting the implementation of a database
- analyse and monitor performance issues during the implementation of a database
- modify a database to meet project and client performance requirements.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe the client business domain
- list current industry-accepted hardware and software products
- describe requirements of basic database design
- identify required database performance standards
- outline quality assurance practices
- outline testing and benchmarking processes
- list three or more current principles of databases.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the database field of work, and include access to:

- industry software packages
- the database management system (DBMS)
- the target database prototype

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- testing and benchmarking software.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTDBS413 Determine database requirements

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Application

This unit describes the skills and knowledge required to identify the scope and the physical and security requirements of a database, including the assessment and identification of options to meet user requirements.

It applies to individuals employed as database administrators who are required to plan and select a database to meet user requirements.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Database

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine the database size	1.1 Determine the database scope from the user requirements 1.2 Calculate the database size from the database scope and technical specifications. 1.3 Document and justify the size and scope of the database
2. Develop the technical database requirements	2.1 Design and document the data tables and relationships suitable to the user requirements and data sample 2.2 Develop and document the data dictionary, table attributes and

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	keys suitable to the user requirements 2.3 Determine and document the database reports required by the user requirements and user acceptance criteria
3. Determine security, performance, recovery and audit requirements	3.1 Determine and document database security controls appropriate for the user requirements and the organisational data security plan 3.2 Determine and document database performance, database recovery and database audit requirements to meet the user requirements and the organisational data security plan
4. Seek client feedback and approval	4.1 Evaluate and document database management systems against the database scope and size, technical database requirements, and security, performance, recovery and audit requirements to determine the appropriate option for the user 4.2 Present database scope and size, technical database requirements, and security, performance, recovery and audit requirements documentation to the user for feedback 4.3 Review user feedback and adjust the database documentation to meet the user acceptance criteria and user feedback 4.4 Present database documentation to the user for final approval

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	**Description**
Reading	• Interprets and analyses textual information in order to gather detailed information, and confirm requirements
Numeracy	• Extracts and calculates numerical information from textual and numerical information to determine and confirm requirements
Writing	• Uses technically appropriate language and presents information in a format and layout that conveys factual information
Oral Communication	• Uses active listening, questioning and summarising skills, in order to effectively identify, and confirm, requirements
Get the work done	• Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information, and identifying, and evaluating options against the agreed criteria • Applies formal problem-solving processes when tackling an

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	unfamiliar problem, breaking complex issues into manageable parts, identifying, and evaluating several options for action • Understands key principles and concepts underpinning the design and operation of digital systems and tools, and applies these when identifying database scope and requirements

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTDBS413 Determine database requirements	ICTDBS401 Identify physical database requirements	Edits to title and application to clarify intent and scope. Edits to elements 1–4 and assessment requirements to clarify intent.	Equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTDBS413 Determine database requirements

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements and performance criteria of this unit; including evidence of the ability to:

- For one database:
  - analyse user requirements and system architecture
  - determine the scope and size of the database
  - evaluate at least three database management systems and select option to meet user requirements
  - develop technical database requirements including tables, relationships, dictionary, attributes and keys
  - document the database scope and requirements
  - align database management system and related user security with data security plan
  - seek and incorporate user feedback
  -

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

- Principles of databases and database design
- General features and capabilities of current databases and database management systems
- Data types and storage requirements of data types and database management systems
- Quality assurance practices that apply to database design
- Technical and security database requirements

Assessment Conditions

Skills must be demonstrated in a workplace or simulated environment where conditions are typical of those in an ICT working environment or ICT workplace. This includes:

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- User requirements and acceptance criteria
- Technical documentation defining the system architecture
- Operating system specifications and security plan
- Database supplier technical specifications and manuals
- Data sample
- Individual user to consult
- Database package

Assessors of this unit must satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTDBS414 Complete database backup and restore

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Application

This unit describes the skills and knowledge required to establish database backup and restore procedures in accordance with organisational requirements, and consistent with the database architecture.

It applies to individuals who are technical support personnel, such as help desk supervisors, information and communications technology (ICT) support technicians, database support technicians and user-support specialists.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Database

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan database backup and restore	1.1 Examine architecture of database file systems and determine likely risk and failure scenarios 1.2 Determine methods for database backup and restore to mitigate likely risk and failure scenarios 1.3 Prepare backup maintenance schedules according to organisational backup and restore policy 1.4 Prepare contingency plans according to organisational

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	backup and restore policy
2. Undertake backup methods appropriate to database requirements	2.1 Complete full off-line backups with acceptable downtime according to organisational backup and restore policy and procedure 2.2 Complete online file backups with acceptable downtime according to organisational backup and restore policy and procedure and organisational data security plan 2.3 Deploy redundant array of inexpensive disks (RAID) configuration aligned with the organisational backup and restore policy 2.4 Arrange off-site copies of backup files consistent with organisational back and restore procedure and organisational data protection plan
3. Establish and test recovery points and disaster-recovery procedures	3.1 Determine and document database recovery points based on backup methods, according to organisational backup and restore policy and procedure 3.2 Test restore process to ensure database can be restored to given recovery points with acceptable down time as specified in organisational backup and restore policy 3.3 Complete and document restoration of databases to point of failure, without loss of committed transactions
4. Create and deploy a standby database	4.1 Create and deploy standby databases to support critical organisational functions according to organisational back and restore policy and procedure 4.2 Prepare documentation for standby databases that meet requirements of organisational backup and restore policy

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	• Analyses complex textual information in order to evaluate a range of backup and restoration methods
Numeracy	• Interprets mathematical information in order to construct date and time based schedules • Extracts and calculates numerical information from textual and numerical information to determine and confirm requirements

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Writing	• Uses technically specific language in developing plans, schedules and documentation • Articulates information, and presents this information, in a clear, concise, sequential and grammatically-correct manner, and in a writing style that is appropriate to the audience
Oral Communication	• Facilitates successful discussions by employing effective listening, questioning and summarising skills to ensure that appropriate information is gathered
Navigate the world of work	• Recognises and follows, both explicit and implicit protocols, and meets expectations associated with own role when complying with organisational and security standards, and guidelines
Get the work done	• Takes responsibility for planning, sequencing and prioritising tasks, and own workload for efficiency, and for effective outcomes • Makes routine decisions, and implements standard procedures, for routine tasks, using formal decision-making processes for more complex and non-routine situations • Addresses less predictable problems and initiates standard procedures in response to these, applying problem-solving processes in determining a solution • Uses familiar digital technologies and systems to access information, search and enter data, and code, present information and communicate with others, cognisant of data security and safety

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTDBS414 Complete database backup and restore	ICTDBS402 Complete database backup and restore	Editorial updates Edit to application, elements 1–4, and assessment requirements to clarify intent.	Equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTDBS414 Complete database backup and restore

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Performance Evidence

The candidate must demonstrate the ability to complete tasks outlined in the elements and performance criteria of this unit; including evidence of the ability to:

- Backup and restore one database
-

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

- Principles and functions of diagnostic tools, structured query language (SQL), databases and backup tuning methodologies
- Principles of backup and recovery methods, database administration, database security and open file backup procedures and restore operations
-

Assessment Conditions

Skills must be demonstrated in a workplace or simulated environment where conditions are typical of those in an ICT workplace or working environment. This includes:

- Organisational data backup and restore policy and procedure
- Organisational security plan
- Vendor documentation
- Information of current industry standard software and diagnostic tools
- Database package with data
- Server, and a networked computer, on which to conduct the backup and restore procedures

Assessors of this unit must satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

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Links

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ICTDBS415 Build a database

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Application

This unit describes the skills and knowledge required to build, implement, test and evaluate a database using an established design.

It applies to individuals employed as database administrators and designers who are required to build databases for information storage and retrieval requirements.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Database

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Confirm the database design	1.1 Review database design documentation, including data structures, queries, reports, and user interfaces to identify organisational data management, access and security requirements 1.2 Evaluate sufficiency of database access and security feature design to organisational data security plan 1.3 Document and rectify inconsistencies between database design and organisational data security plan
2. Create a prototype	2.1 Develop prototype database according to database design

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database	2.2 Populate database tables with current organisational data to test database implementation 2.3 Write conversion programs to import data from existing systems in accordance with scope specified in database design documentation 2.4 Assess functionality of prototype with user, including identifying errors in program code and modifying user interfaces and reports 2.5 Incorporate feedback from user into prototype 2.6 Obtain user approval of prototype
3. Deploy the database	3.1 Develop implementation plan for database aligned with user acceptance criteria 3.2 Install database management system software on network in accordance with implementation plan 3.3 Populate database tables with organisational data in accordance with implementation plan 3.4 Implement security and access controls in accordance with database design documentation and implementation plan 3.5 Test and document database output and security controls, and record results in accordance with database design documentation
4. Evaluate the database	4.1 Review the database against user acceptance criteria and rectify discrepancies 4.2 Complete database documentation in accordance with user acceptance criteria 4.3 Identify and document user training requirements from database design documentation 4.4 Seek and secure user acceptance of database in accordance with user acceptance criteria

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	**Description**
Reading	• Analyses and interprets textual information in order to establish client system requirements and establish design inconsistencies

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Writing	• Uses appropriate technical terminology in recording test results and discrepancies • Produces reports and documentation that are cohesive and well-structured, in order to convey detailed and accurate information, and instructions
Oral Communication	• Uses active listening, questioning and summarising skills to establish client requirements, training needs and when seeking product or stage approval
Interact with others	• Recognises and applies the protocols governing what to communicate, with whom, and how
Get the work done	• Sequences and schedules complex activities, monitors implementation and manages relevant communication • Uses a formal decision-making process, setting or clarifying goals, gathering information, and identifying and evaluating several choices, against a limited set of criteria • Uses analytical processes to decide on a course of action, establishing criteria for deciding between different options

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTDBS415 Build a database	ICTDBS412 Build a database	Minor updates to elements 1–4 to clarify intent. Edits to assessment requirements to clarify intent.	Equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTDBS415 Build a database

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in elements and performance criteria of this unit; including evidence of the ability to:

- For one database:
  - review the database design documentation including data structures, queries, reports, access, and user interface
  - identify the organisation's data management and security requirements
  - produce a prototype database including current organisation data and assess the functionality of the database with the user
  - populate and perform tests on the database
  - interact with the user to obtain approval
  - identify and document user training requirements

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

- Principles of database design including database management system (DBMS) fundamentals
- Functions and features of a database
- Logical data modelling
- Object-model design concepts related to:
  - development of data structures
  - development of a prototype
  - queries
  - user interfaces
  - reports
- Physical design concepts in relation to a prototype
- Run-time facilities related to implementing a live database and operation of a prototype
- Structured query language (SQL)

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- Principles and concepts underpinning the design, and operation of digital systems and tools.
-

Assessment Conditions

Skills must be demonstrated in a workplace or simulated environment where conditions are typical of those in an ICT working environment or ICT workplace. This includes:

- Software packages and systems containing organisational data
- Database design documentation including data structure, queries, reports, and user interfaces
- Database management system software
- Individual user to consult
- User acceptance criteria
- Networked computer on which to install the database management system software and conduct testing
- Organisational data security plan.
- Data organisation system with existing data

Assessors of this unit must satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTDBS503 Create a data warehouse

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to design, develop and implement a data warehouse within an organisation.

It applies to individuals who are senior database staff required to provide data warehouse functionality for their organisation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Database

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify the required data and sources	1.1 Identify the required organisational data, according to the enterprise's knowledge management strategy 1.2 Identify the subject areas, according to the business processes and the required enterprise data 1.3 Explore the operational data, define the warehouse sources, and record the outcomes 1.4 Develop the warehouse source specifications, according to the existing data tables and files

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ELEMENT	PERFORMANCE CRITERIA
2. Determine warehouse operational steps and processes	2.1 Develop the warehouse targets, according to the business processes and the required enterprise data 2.2 Identify the warehouse agents, according to the system's configuration 2.3 Identify and develop, warehouse steps and processes
3. Design and develop warehouse features	3.1 Design and develop the warehouse user interface, according to the principles of user interface design 3.2 Develop and implement the warehouse security strategy, according to the enterprise's security plan 3.3 Identify dimension tables and fact tables, according to the required enterprise data 3.4 Develop the warehouse information catalogue, according to the enterprise's knowledge management strategy
4. Test and implement the data warehouse	4.1 Test data the warehouse against the business requirements, to ensure that iterations meet the business objectives 4.2 Recommend changes to business processes, to ensure compatibility with the data warehouse and the knowledge management strategy 4.3 Implement the data warehouse 4.4 Establish an ongoing maintenance schedule to keep the system efficient 4.5 Benchmark and document the performance level of the data warehouse
5. Finalise work processes	5.1 Arrange for users to have ongoing training in the data warehouse 5.2 Validate the test results 5.3 Obtain sign-off for the data warehouse

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description

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Reading	1.1-1.4, 2.2, 2.3, 3.3, 4.5, 5.2	• Critically analyses documentation from a variety of sources and records, and consolidates, information to determine requirements
Writing	1.3, 2.1, 2.3, 3.1, 3.2, 3.4, 4.2, 4.4, 4.5, 2.2, 5.3	• Collates and compiles data and text, using clear and detailed language, in order to convey specific information, requirements and recommendations
Oral Communication	1.1-1.3, 2.1, 2.3, 4.2, 4.3, 5.1-5.3	• Uses effective listening, questioning and summarising skills, to articulate requirements and convey information clearly
Numeracy	4.5	• Perform mathematical calculations to analyse the cost benefit of the data warehouse project
Navigate the world of work	3.2, 3.4, 4.1, 4.2	• Recognises and follows, explicit and implicit protocols, and meets the expectations associated with own role when obtaining sign-off for the data warehouse • Modifies or develops organisational policies and procedures, to comply with legislative requirements and organisational goals
Get the work done	All	• Develops plans to manage relatively complex, non-routine tasks, with an awareness of how they may contribute to the longer-term operational and strategic goals • Makes a range of critical and non-critical decisions in relatively complex situations, taking a range of constraints into account • Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information, and identifying and evaluating options, against the agreed criteria • Uses and investigates new digital technologies and applications to manage and manipulate data, and to communicate effectively with others, in a secure and stable digital environment

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTDBS503 Create a	ICADBS503B Create	Updated to meet Standards for	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
data warehouse	a data warehouse	Training Packages	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTDBS503 Create a data warehouse

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- prepare the specifications for a data warehouse, from a range of organisational information
- design a data warehouse system that reflects the current, and future, business specifications, and also the business's knowledge management strategy
- test the data warehouse system
- implement the data warehouse design.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain the functions and features of:
  - data warehousing and data mining
  - dimension tables and fact tables
  - various steps and processes, including transformer steps, program steps, structured query language (SQL) steps, and user-defined program steps
  - subject areas, warehouse sources and warehouse targets
  - warehouse agents and agent sites
- outline the business operating systems related to the data sources
- describe the decision support systems related to the knowledge management strategies
- define the parameters for a security plan
- outline the system's configuration parameters
- describe the key features of "Big Data" including:
  - data access speeds and processing

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- the information handled by large corporations
- distribution, via the cloud, across the database servers.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the database field of work, and include access to:

- equipment and materials
- industry software packages
- the business requirements
- computers configurable as information servers
- the enterprise's knowledge management strategy
- internet connectivity tools
- the local area network (LAN), with a relational database management system (DBMS)
- proxy server software
- specialised internet security software.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTDMT501 Incorporate and edit digital video

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to incorporate, and edit, digital video into interactive media presentations.

It applies to individuals who possess a sound knowledge of digital media, are independently responsible for the workflow process and provide support and supervision within a team.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Digital media technologies

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and describe the formats of digital video	1.1 Determine the distinguishing features and uses of a range of digital video software 1.2 Select the current video-editing software appropriate to a range of given outcomes 1.3 Determine the limiting factors of computer hardware on video production for a specified job 1.4 Determine the differences of image quality and image size, required to deliver the desired outcome

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ELEMENT	PERFORMANCE CRITERIA
	1.5 Analyse the formats employed to create a given computer video sequence for a specified outcome
2. Design the digital video	2.1 Assess and select appropriate digital video software for the job 2.2 Use digital video-editing software to combine video assets 2.3 Control variations in video frame rates, as required for the job to be undertaken 2.4 Apply time-stamping techniques to the video frames, appropriate for the job to be undertaken 2.5 Save the digital video using the appropriate file techniques
3. Edit the digital video	3.1 Edit single and multiple video tracks to achieve a defined outcome 3.2 Join the multiple tracks of a digital video, according to specifications 3.3 Employ digital effects to modify and integrate digital video tracks, according to specifications 3.4 Apply time encoding to single and multiple-edited digital video tracks, according to specifications 3.5 Insert a video track into an interactive media production, according to specifications
4. Present a digital video sequence	4.1 Test the digital video, and combine with other digital imaging, sound, visual effects and animation to create an interactive media presentation 4.2 Save the digital media presentation, including the video, and present to the client or customer

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.5, 2.1, 4.1	• Integrates a range of texts and organisational information to critically analyse data and evaluate text in order to determine effective engagement

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		methods, and to monitor the effectiveness of systems for the audience and environment
Writing	2.5, 4.2	• Develops material and resources utilising knowledge of spelling, grammar, appropriate structure and layout, to organise and record information and feedback in a sequential manner for client and staff engagement, as well as internal reference
Oral Communication	4.2	• Participates in verbal exchanges of ideas that elicit views, opinions and feedback from others, using appropriate professional techniques and interpersonal skills to effectively, and respectfully, convey information and establish rapport
Numeracy	1.2, 1.4, 3.1-3.5	• Interprets mathematical information embedded in technical and conceptual information
Get the work done	1.1-1.5, 2.1-2.5, 3.1-3.5, 4.1-4.2	• Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others taking into account capabilities, efficiencies and effectiveness • Applies systematic and analytical decision-making processes for complex and non-routine situations • Responds intuitively to problems requiring immediate resolution, drawing on past experiences in order to focus on the cause of a problem rather than the symptom • Understands the purposes, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine and non-routine tasks

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTDMT501 Incorporate and edit digital video	ICADMT501A Incorporate and edit digital video	Updated to meet Standards for Training Packages	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTDMT501 Incorporate and edit digital video

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- produce, visualise and interpret creative concepts for digital video
- demonstrate application of the principles of video-editing and production techniques
- design, compile, edit and test the digital interactive media incorporating video.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain contemporary video software
- explain the importance of and actions required to ensure continuity during the editing process
- outline editing conventions
- identify electronic digital language and other terminology
- explain the purpose of using montage as part of a presentation, and the impact of sound and visual effects
- describe principles of video production and formats
- describe the types of cutting
- explain video-editing and post-production techniques.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the digital media field of work, and include access to:

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- special purpose tools, equipment, and materials
- industry software
- the internet
- copyright and intellectual property legislation
- workplace health and safety (WHS) legislation
- enterprise policy.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTDRE302 Locate and rectify digital reception equipment faults

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to locate and rectify all types of customer digital reception equipment (DRE) faults on a customer premises as part of a home network.

It applies to individuals who install and maintain integrated services in digital receiving equipment or small business networks, and who apply skills and knowledge in this unit to locate and rectify faults of DRE home networks such as broadband, digital TV, free to air (FTA), subscription TV (pay TV) and internet protocol TV (IPTV).

No licensing, legislative or certification requirements apply at the time of publication.

Unit Sector

Telecommunications – Digital Reception Technology

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for DRE fault identification	1.1 Obtain relevant legislation, codes, regulations and standards for compliance when conducting work 1.2 Notify customer to verify fault report and arrange for site access to comply with security arrangements 1.3 Notify supervisor of identified safety hazards at worksite and complete a

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ELEMENT	PERFORMANCE CRITERIA
	job safety analysis (JSA) before commencing work 1.4 Identify existing warranties, service agreements and equipment specifications and documentation covering digital reception equipment 1.5 Select and obtain tools and materials appropriate for the work order
2. Assess likely cause and location of fault	2.1 Verify system details to assist with fault identification 2.2 Assess available data and historical trends to determine likelihood of fault being the set top fault or existing customer equipment or cabling fault 2.3 Rank likely causes of fault in order of probability ensuring a methodical approach to fault-finding is used 2.4 Discuss problem fully with customer and advise of likely charges
3. Perform tests to diagnose fault	3.1 Conduct visual inspection of system for likely damage following work health and safety (WHS) and environmental requirements 3.2 Check connections, plugs, terminations and leads for operation 3.3 Measure signal strength at wall plate and beyond to ensure adequate signal level for equipment processing 3.4 Conduct functional test of facilities to identify faulty equipment 3.5 Progressively isolate fault to remove likely variables from assessment using manufacturer's diagnostic chart 3.6 Locate fault with minimal disruption to client activity, in the shortest possible time 3.7 Provide customer with regular progress reports
4. Rectify faults	4.1 Identify faulty cabling parts and equipment and replace or repair according to service agreement 4.2 Advise customer of cost of repair if service agreement does not exist 4.3 Re-program equipment to customer requirements if required 4.4 Complete work in a manner safe to repairer and customer
5. Provide replacement service to customer	5.1 Provide customer with temporary replacement equipment similar to existing equipment while faulty equipment is being repaired 5.2 Program replacement equipment to customer requirements 5.3 Test replacement service for functionality before handover – to meet customer satisfaction
6. Clean up worksite and complete	6.1 Remove waste and debris from site and dispose of in a safe and environmentally appropriate manner 6.2 Restore site to original condition and customer satisfaction

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ELEMENT	PERFORMANCE CRITERIA
documentation	6.3 Prepare invoices and other financial documentation, where required, and present to customer 6.4 Obtain authorised signatures on required documentation to confirm acceptance of completed work

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.4, 2.1	• Interprets textual information from relevant sources to identify key information
Writing	1.3, 3.3, 3.5, 6.3,	• Uses clear, specific and industry-related terminology to complete workplace documentation
Oral Communication	1.2, 2.4,	• Articulates clearly using appropriate language for environment and uses listening techniques to confirm understanding
Numeracy	3.3	• Takes readings and measurements and interprets results
Navigate the world of work	1.1, 1.5, 5.1, 6.1-6.4	• Takes responsibility for following safe, sustainable, appropriate and efficient workplace procedures
Interact with others	4.2, 6.4	• Deals with customer to provide reports and sign-off on completed work
Get the work done	2.1-2.3, 4.1, 4.3, 4.4, 5.2, 5.3,	• Plans, organises and implements tasks efficiently to meet customer requirements

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTDRE302 Locate and rectify digital reception equipment	ICTDRE3157B Locate and rectify digital reception	Updated to meet standards for Training	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
faults	equipment faults	Packages	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTDRE302 Locate and rectify digital reception equipment faults

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- determine parameters for addressing digital reception faults for a customer and keep customer informed on progress
- apply a methodical approach to fault identification
- use test equipment to identify faults
- interpret test results
- install temporary equipment while repairs are affected
- repair faults, repair cable terminations or replace faulty cable equipment and test to verify correct function
- complete documentation in accordance with enterprise requirements and present to customer for approvals.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- discuss broad knowledge of whole industry product range
- outline customer service principles, particularly dealing with customers face to face
- explain enterprise methods for test analysis and diagnosis
- discuss enterprise or service specific knowledge of products and services supplied
- review work health and safety (WHS) general principles and enterprise specific job safety analysis (JSA) requirements
- give an overview knowledge of:
  - objectives and methods of training for product use for customer education
  - radio frequency (RF) theory, principles and safety

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  - telephony principles to support return path awareness
- identify pre-installation enterprise-specific requirements
- state quality assurance of enterprise requirements
- explain return path technology
- list signal measurement and other enterprise-specific tools
- discuss understanding of contemporary equipment and connection methods.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the Telecommunications – Digital Reception Technology industry and include access to:

- site for digital reception equipment installation
- digital reception equipment currently used in industry
- test equipment required for digital reception equipment installation and testing.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTDRE303 Install a complex digital reception system

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to design, install, test and commission a complex digital reception broadband service system.

It applies to individuals who work on complex radio frequency (RF) and digital distribution systems, such as master antenna television (MATV) and satellite master antenna television (SMATV), in commercial or multi-dwelling unit (MDU) environments.

No licensing, legislative or certification requirements apply at the time of publication.

Unit Sector

Telecommunications – Digital Reception Technology

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan installation of a complex digital reception system	1.1 Notify customer to arrange access to site and identify customer equipment 1.2 Select type of complex digital systems and consequent constraints on installation according to customer specifications 1.3 Complete a job safety analysis (JSA) identifying work health and

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ELEMENT	PERFORMANCE CRITERIA
	safety (WHS) issues 1.4 Prepare for installation according to relevant legislation, codes, regulations and standards 1.5 Verify design requirements are suitable for site application and required system performance
2. Assemble complex digital reception system	2.1 Select and obtain materials, tools and equipment for installation 2.2 Select suitable headend location and cable access 2.3 Build headend according to design requirements and manufacturer's specifications 2.4 Configure headend and distribution devices to operate according to design and manufacturer's specifications 2.5 Run cables along identified routes 2.6 Terminate cables according to both design and manufacturer's specifications
3. Test and commission system	3.1 Conduct performance test operation of headend and distribution devices 3.2 Activate system and conduct signal measurement using test equipment 3.3 Record and analyse initial test results for quality of service according to design specifications 3.4 Rectify identified faults and adjust system to optimal operation 3.5 Conduct final signal measurement using test equipment to optimise performance 3.6 Update design plans to 'as built' status
4. Complete administrative tasks	4.1 Record final commissioning test results and settings in line with client requirements 4.2 Complete appropriate records and test results, and store according to policy 4.3 Complete all financial and other documentation 4.4 Hand over to customer and obtain sign off

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Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	• Interprets textual information from relevant sources to identify relevant and key information
Writing	• Uses clear, specific and industry related terminology to complete workplace documentation
Oral Communication	• Articulates clearly using appropriate language for environment and uses listening techniques to confirm understanding
Numeracy	• Takes readings and measurements and interprets results
Navigate the world of work	• Takes responsibility for following safe, sustainable, appropriate, and efficient workplace procedures
Interact with others	• Makes contact with customer • Deals with customer to obtain sign-off on completed work
Get the work done	• Plans, organises and implements tasks efficiently to meet customer requirements • Identifies and resolves problems

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTDRE303 Install a complex digital reception system	ICTDRE303 Install a complex digital reception system	Updates to application and knowledge evidence. Updates to template to apply consistent format between units.	Equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTDRE303 Install a complex digital reception system

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- obtain relevant approvals for access to site and equipment
- plan, assemble and install a complex digital reception system
- conduct functionality tests and interpret results
- examine performance of adjustments (tuning, balancing and replacing components)
- perform handover with customer
- apply related work health and safety (WHS) requirements and work practices.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- procedures and equipment required for measurement of:
  - forward and reflected radio frequency (RF) power
  - feedline insertion loss
  - distance to fault
  - modulation error rate (MER) and bit error rate (BER) for purpose of signal integrity
- features of instruments, test equipment and performance requirements
- legislation, codes of practice and other formal agreements directly impacting operation and testing of radio communications antennas and equipment

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- principles of master antenna television (MATV) and satellite master antenna television (SMATV)
- RF spectrum and its relationship to digital reception systems
- RF awareness, electromagnetic radiation (EMR) standards and specific WHS requirements impacting use and testing of radio communications instruments and equipment
- typical issues and challenges that occur in telecommunications antenna installations.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- site for complex digital reception system installation
- complex digital reception systems currently used in industry
- test equipment required for digital reception system installation and testing.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTDRE305 Develop integrated digital reception systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to develop integrated digital reception system applications, topologies, devices and capabilities, and system programming methods; as well as use diagnostic tools and documentation of developed systems.

It applies to cablers who install emerging digital reception equipment and cabling systems for domestic and small to medium enterprise information technologies.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Digital Reception Technology

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to develop an integrated system	1.1 Determine types and location of loads and control devices from project specifications and customer requirements 1.2 Determine number of control bus networks and current requirements from load calculations for devices on the system 1.3 Determine appropriate placement of system devices to optimise bus network power and load parameters, and maintain system stability 1.4 Develop an integrated system to comply with regulator, safety and

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ELEMENT	PERFORMANCE CRITERIA
	manufacturer requirements 1.5 Document take-off of the number of devices and accessories required for the system, using manufacturer's title and ID for each 1.6 Download required programming and diagnostic tools to a compatible PC and check for correct operation and safety
2. Program integrated system devices	2.1 Follow work health and safety (WHS) risk control measures and procedures 2.2 Apply correct modes of programming to develop an integrated system according to manufacturer's programming software instructions 2.3 Follow manufacturer's instructions and recommendations when programming system devices to project requirements 2.4 Program parameters for operation of loads to project requirements and within manufacturer's designated range 2.5 Save and backup the programmed system database according to manufacturer instructions
3. Load and test integrated system	3.1 Follow WHS risk control work measures and procedures 3.2 Transfer database of integrated system program to network 3.3 Test all functions of the integrated system for compliance with project requirements and manufacturer specifications 3.4 Use diagnostic tools to locate system faults, defects and anomalies 3.5 Correct defects and anomalies to comply with project requirements and manufacturer specifications 3.6 Provide copy of documentation of integrated system at handover to customer

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.3-1.5, 2.2, 2.3, 3.3	• Reads and interprets plans, specifications, computer program interface, and other documentation from a variety of sources, and consolidates information to determine requirements

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Writing	1.5, 2.4, 3.2	• Develops procedural material for a specific audience using clear and detailed language to convey explicit information, requirements and recommendations
Oral Communication	1.1	• Effectively participates in verbal exchanges using collaborative and inclusive techniques including active listening and questioning, and reading of verbal and non-verbal signals to convey and clarify information
Numeracy	1.1-1.3	• Calculations required for determining design specifications • Performs mathematical calculations to check, interpret and confirm results of system tests
Navigate the world of work	1.4, 2.1, 3.1	• Understands rights and responsibilities in complying with standards and regulatory requirements
Get the work done	1.3, 1.6, 2.2-2.5, 3.2-3.4	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes • Makes routine decisions and implements standard procedures for routine tasks, using formal decision-making processes for more complex and non-routine situations • Addresses less predictable problems and initiates standard procedures in response, applying problem-solving processes in determining a solution • Uses familiar digital technologies and systems to access information, search and enter data and code, present information and communicate with others, cognisant of data security and safety

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTDRE305 Develop integrated digital reception systems	ICTDRE3249A Develop integrated digital reception systems	Updated to meet standards for Training Packages	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTDRE305 Develop integrated digital reception systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- Comply with standards, regulations and work health and safety (WHS) procedures and practices when developing an integrated system
- communicate with customers
- determine the full scope of specifications for an integrated digital reception system
- use calculations to correctly determine the number of network and current requirements
- place system devices appropriately in system scheme
- apply and check appropriate modes of programming and diagnostic tools in the design
- program devices and set load operating parameters according to manufacturer specifications
- use diagnostic tools to locate and correct system defects, faults and anomalies
- document and backup system during appropriate stages of the project.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe the applications and advantages of integrated systems
- identify the bus system cable type, polarity, length and acceptable topologies
- describe the process of controlling digital system integration (DSI) and communicating with digital addressable lighting interface (DALI) electronic ballasts
- identify factors that affect control bus stability, including number of units on a network, and current drawn by devices in relation to current output of power supplies
- define the operating parameters of integrated systems and programming to an extent indicated by:
  - importance of project documentation and backup

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    - importance of location of output and input devices and control bus power supplies
- describe lighting dimmer capabilities and selection
- determine the low voltage (LV) supply overcurrent and surge protection
- describe multiple network connectivity
- identify the software used for system and device programming, monitoring and control
- explain system and device programming, encompassing:
    - addressing conventions for networks, devices, applications, output groups, types of control and outputs, which include ‘on’, ‘off’, a specific level, and over a specific time
    - PC programming tools and methods (programming includes configuring network database using addressing tools and objects, function objects, editing, altering and transferring the database to network)
- identify and describe system fault-finding processes
- determine the system components, encompassing:
    - support devices for control bus supply and control
    - support devices for programming, interconnection between networks and integration with third party systems
- describe the types and capabilities of input and output devices.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the Telecommunications – Digital Reception Technology industry and include access to:

- a typical contemporary dwelling into which a digital system will be developed
- availability of all functional requirements of a modern home
- access to contemporary digital equipment
- access to all current standards, codes and regulations.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTDRE401 Integrate customer digital reception equipment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to integrate emerging audiovisual technology equipment in a customer home network.

It applies to individuals working as installers with a range of customer equipment limited to radio frequency (RF) signal services types requiring current knowledge of equipment capabilities and connection types.

No licensing, legislative or certification requirements apply at the time of publication. However, users should confirm requirements with the relevant federal, state or territory authority.

Unit Sector

Telecommunications – Digital Reception Technology

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Evaluate existing customer equipment	1.1 Obtain relevant legislation, codes, regulations and standards for compliance when conducting work 1.2 Notify customer to verify installation order and arrange for site access to comply with security arrangements 1.3 Notify supervisor of identified safety hazards at worksite and complete a job safety analysis (JSA) before commencing work

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Use test equipment to verify customer equipment is operational prior to installation 1.5 Assess equipment capabilities and connection types against customer requirements for suitability 1.6 Assess customer premises against installation plan according to client specifications and by-laws, standards and regulations 1.7 Produce an installation diagram using appropriate drawing symbols to indicate connection details of customer system
2. Design and build system	2.1 Determine connection pathways for optimal performance of system equipment 2.2 Confirm compatibility for proposed connections to existing system 2.3 Produce a final design with block diagrams and specifications 2.4 Select and connect cables to suit connectivity using appropriate materials 2.5 Activate equipment to check for network operation
3. Provide enterprise equipment	3.1 Determine best method of connection to service source according to client specifications 3.2 Connect service to system following work health and safety (WHS) and environmental requirements and test to verify connection status 3.3 Notify service provider if identified problems cannot be rectified at local level
4. Configure services and optimise customer system	4.1 Conduct client specific and customer set-up operations 4.2 Test performance of enterprise and customer equipment across a range of settings 4.3 Record and evaluate test results to satisfy manufacturer's operational margins 4.4 Tune customer equipment for optimal performance 4.5 Restore site to original condition and customer satisfaction
5. Train customer and complete contract documentation	5.1 Conduct customer training appropriate to equipment, services and vendor literature 5.2 Complete appropriate records and update administration systems according to enterprise policy 5.3 Record and store test results in appropriate database, leaving copies on site according to enterprise policy 5.4 Provide warranties to customer in required format where work and

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ELEMENT	PERFORMANCE CRITERIA
	equipment are subject to warranty 5.5 Prepare invoices and other financial documentation, where required, and present to customer 5.6 Obtain authorised signatures on required documentation to confirm acceptance of completed work

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.4, 5.1, 5.3	• Interprets textual information from relevant sources to identify key information
Writing	1.7, 2.3, 4.3, 5.3, 5.5	• Uses clear, specific and industry-related terminology to complete workplace documentation
Oral Communication	1.2, 1.3, 5.1	• Articulates clearly using appropriate language for environment and uses listening techniques to confirm understanding
Numeracy	4.2, 5.5	• Takes readings and measurements and interprets results • Uses simple calculations to prepare financial documentation
Navigate the world of work	1.5, 1.6, 2.1, 2.2, 3.1, 3.2, 4.1, 4.4, 4.5, 5.4	• Takes responsibility for following safe, sustainable, appropriate and efficient workplace procedures
Interact with others	3.3, 5.6	• Advises service provider of any problems that cannot be resolved locally • Deals with customer to sign-off on completed work
Get the work done	2.4, 2.5	• Plans, organises and implements tasks to achieve them efficiently to meet customer requirements

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTDRE401 Integrate customer digital reception equipment	ICTDRE4166A Integrate customer digital reception equipment	Updated to meet standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTDRE401 Integrate customer digital reception equipment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- identify modulation and other signal characteristics of a range of contemporary products
- design and build system
- install three types of equipment and services, applying all related work health and safety (WHS) requirements and work practices
- configure services and optimise customer system
- conduct functionality tests and interpret results
- provide customer training appropriate to equipment
- complete task and handover to customer.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify analog and digital connectors
- list contemporary equipment and connection methods
- explain continuity, ingress, egress, signal level and signal quality performance tests
- outline customer service principles, particularly dealing with customers face-to-face
- discuss enterprise or service specific knowledge of products and services supplied
- describe equipment types:
  - amplifiers
  - couplers
  - splitters
  - taps
- discuss modulation techniques

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- define objectives and methods of training for product use for customer education
- discuss WHS general principles and enterprise-specific job safety analysis (JSA) requirements
- assess performance adjustments for tuning, balancing and replacing components
- summarise quality assurance of enterprise requirements
- review test analysis and diagnosis (enterprise diagnosis methods)
- describe video and audio fundamentals

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the Telecommunications – Digital Reception Technology industry and include access to:

- a site for Digital Reception Technology (DRE) integration
- DRE currently used in industry
- test equipment required for DRE integration.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTDRE402 Integrate data delivery modes

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to connect and configure a media centre that integrates signal for distribution.

It applies to individuals working as installers in the digital reception sector integrating services from multiple sources and in multiple formats (radio frequency, digital, data, and voice) for both inward and outbound signals into complex customer systems.

No licensing, legislative or certification requirements apply at the time of publication.

Unit Sector

Telecommunications – Digital Reception Technology

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Evaluate existing customer equipment	1.1 Obtain relevant legislation, codes, regulations and standards for compliance when conducting work 1.2 Notify customer to verify installation order and arrange for site access to comply with security arrangements 1.3 Notify supervisor of identified safety hazards at worksite and complete job safety analysis (JSA) before commencing work 1.4 Use test equipment to verify customer equipment is operational

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ELEMENT	PERFORMANCE CRITERIA
	prior to installation 1.5 Assess equipment capabilities and connection types against customer requirements for suitability 1.6 Assess customer premises against installation plan according to client specifications and by-laws, standards and regulations 1.7 Produce an installation diagram using appropriate drawing symbols to indicate connection details of customer system
2. Design and build a multiple service customer system solution	2.1 Determine connection requirements and pathways for each service to be connected and locate a signal source for each service 2.2 Confirm compatibility for proposed pathway options connections to existing system and for optimal performance 2.3 Produce preliminary connection plan with block diagrams and specifications to optimise system performance 2.4 Evaluate connection plan design to determine any local spectrum management issues arising from multiple services 2.5 Produce final connection design with amendments to eliminate local spectrum management contentions, if required 2.6 Select and connect cables according to connection plan using appropriate materials 2.7 Activate equipment to check network operation 2.8 Resolve connection issues that arise during build phase and modify connection plan
3. Provide enterprise equipment with multiple services	3.1 Determine optimal method of connection to each service source according to client specifications 3.2 Connect service to system following work health and safety (WHS) and environmental requirements, and test to identify and rectify connection issues 3.3 Notify service provider if problems cannot be rectified locally, and escalate unresolvable connection issues accordingly
4. Configure services and optimise customer system across multiple services	4.1 Conduct client specific and customer set-up operations for each service 4.2 Test performance of enterprise and customer equipment across a range of settings 4.3 Test integrated performance of system across multiple services 4.4 Record and evaluate test results to satisfy manufacturer's operational margins 4.5 Tune customer equipment for optimal integrated performance

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ELEMENT	PERFORMANCE CRITERIA
	across multiple services 4.6 Restore site to original condition and customer satisfaction
5. Train customer and complete contract documentation	5.1 Conduct customer training appropriate to equipment, services and vendor literature 5.2 Complete appropriate records and update administration systems according to enterprise policy 5.3 Record and store test results in appropriate database, leaving copies on site according to enterprise policy 5.4 Provide warranties to customer in required format where work and equipment are subject to warranty 5.5 Prepare invoices and other financial documentation where required and present to customer 5.6 Obtain authorised signatures on required documentation to confirm acceptance of completed work

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.4-1.6, 2.4, 3.1, 4.2, 5.1	• Interprets textual information from appropriate sources to identify relevant and key information
Writing	1.3, 1.7, 2.3, 2.5, 4.4, 5.2, 5.3, 5.5	• Uses clear, specific and industry-related terminology to complete workplace documentation
Oral Communication	1.2, 1.3, 3.3, 5.1	• Articulates clearly using appropriate language for environment, and uses listening techniques to confirm understanding
Numeracy	4.3, 5.5	• Takes readings and measurements and interprets results • Uses simple calculations to prepare financial documentation
Navigate the world of work	1.1, 5.4,	• Takes responsibility for following safe, sustainable, appropriate, and efficient workplace procedures

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Interact with others	5.6	• Liaises with customer to sign-off on completed work when completed to customer's requirements
Get the work done	1.3, 2.1, 2.2, 2.6-2.8, 3.2, 3.3, 4.1, 4.3, 4.5, 4.6	• Plans, organises and implements tasks efficiently to meet customer requirements • Makes decisions on technical requirements • Advises service provider of any problems that cannot be resolved locally

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTDRE402 Integrate data delivery modes	ICTDRE4167A Integrate data delivery modes	Updated to meet standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTDRE402 Integrate data delivery modes

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- identify service requirements of a range of contemporary products
- design and build a multiple service customer system solution
- install and integrate at least two services to a customer system comprised of at least three equipment components applying all related work health and safety (WHS) requirements and work practices
- activate and optimise customer equipment using two or more signal sources
- configure services and optimise customer system across multiple services
- conduct functionality tests and interpret results
- provide customer training appropriate to the equipment.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- list contemporary equipment and connection methods
- outline customer service principles, particularly dealing with customers face to face
- discuss enterprise or service specific knowledge of products and services supplied
- describe equipment types:
  - amplifiers
  - couplers
  - taps
  - splitters
- describe home automation
- identify functions of home theatre system components

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- explain modulation techniques
- discuss WHS general principles and enterprise specific job safety analysis (JSA) requirements
- assess performance adjustments for tuning, balancing and replacing components
- summarise quality assurance of enterprise requirements
- evaluate security systems
- review test analysis and diagnosis (enterprise diagnosis methods)
- identify test equipment and signal measurement and other enterprise-specific tools
- explain principles of video and audio technologies
- explain wireless local area networks (WLANs)
- explain wireless technology.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the Telecommunications – Digital Reception Technology industry and include access to:

- a site for data delivery modes integration
- equipment currently used in industry
- test equipment required for data delivery integration.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTEDU301 Train customers in new technology

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to conduct training for customers on telecommunications equipment including convergent technology applications, such as internet protocol television (IPTV), digital television and internet protocol (IP) based customer equipment. It involves assessing the type of training suitable for the product and customer, delivering and checking the training.

It applies to individuals involved with installation of new technology or an upgrade of an existing network or subsystem deploying next generation networks (NGN) for customer premises equipment (CPE) installation, or as dedicated trainers involved in very large installations.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Education

Elements and Performance Criteria

Elements	**Performance Criteria**
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify training required	1.1 Confirm training to be provided with installation quote 1.2 Assess customer’s expertise and actual training details

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	1.3 Identify and prepare for specialised training needs 1.4 Provide quotes for enhanced training and confirm with customer
2. Conduct training	2.1 Demonstrate and explain relevant equipment, functions and network facilities 2.2 Provide customers with hands-on experience operating the equipment 2.3 Provide feedback to customers on their operational ability 2.4 Provide customers with relevant product literature 2.5 Provide enhanced training as agreed
3. Check training	3.1 Measure customer's skill using the equipment 3.2 Review training delivery and note improvements 3.3 Update and store records according to organisational requirements

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 1.3, 2.4, 3.1, 3.2, 3.3,	• Evaluates and integrates facts and ideas to construct meaning and develop training plans from a range of sources
Writing	1.3, 1.4, 2.1-2.53.2, 3.3	• Communicates relationships between ideas and information in a style appropriate to audience and purpose
Oral Communication	1.1, 1.4, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1	• Demonstrates flexibility in spoken texts by choosing appropriate structures and strategies while instructing, providing constructive feedback or interacting with customers, employer, supervisors, work associates, team members and other contractors
Numeracy	1.1, 1.4, 3.1,	• Identifies and comprehends relevant mathematical information in familiar activities or texts such as costing training
Navigate the world of work	3.3	• Complies with explicit policies and procedures • Explores and implements, where identified, implicit expectations of policies and procedures

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Interact with others	1.2, 2.1, 2.2, 2.3, 2.4, 2.5	• Identifies and takes steps to follow accepted communication practices and protocols • Recognises common cultural and other differences of people in the work context, and makes adjustments in addressing differences • Elicits feedback and provides feedback to others
Get the work done	1.1, 1.3, 3.1, 3.2	• Plans and implements routine tasks and workload making limited decisions on sequencing, timing and collaboration, seeks assistance in setting priorities • Makes low-impact decisions within familiar situations, based on a range of predefined or routine solutions, and evaluates effectiveness of outcome

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTEDU301 Train customers in new technology	ICTEDU3053A Train customers in new technology	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTEDU301 Train customers in new technology

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- review and confirm predetermined training for telecommunications installation
- analyse learner characteristics and actual training needs
- prepare training material, including equipment specifications and guidelines
- conduct customer training on a telecommunications installation including:
  - demonstration
  - hands-on experience
  - feedback on performance
- complete training documentation.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe in detail the content of learning to be provided
- explain common sources of technical training information
- summarise and explain appropriate training techniques for:
  - demonstration
  - individual and group activities
  - instruction
  - questioning.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications – Education field of work and include access to:

- a range of information and training resources
- customer premises equipment product information
- appropriate training facilities
- relevant industry software packages.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTEDU501 Develop and deliver training associated with new and modified products

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to design, conduct and evaluate effective vendor training programs for users and operators of telecommunications equipment. This includes digital or analog communications applications, including telephony, data, video, digital broadcasting, local area networks (LAN), wide area networks (WAN) and multimedia. These may be domestic, commercial or industrial installations.

It applies to individuals involved with customer support activities for the purpose of training technical support or maintenance staff.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Education

Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to develop training	1.1 Confirm training specifications required for a specific product with client 1.2 Research available and relevant material and prepare an outline for

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program	proposed training 1.3 Present and confirm suitability of proposed outline with client 1.4 Determine training schedule parameters 1.5 Establish criteria for post-training evaluation
2. Design training program and support material	2.1 Develop training program that follows a logical sequence and builds on existing knowledge of recipients 2.2 Create training material that meets up-to-date product and technical information and all related workplace health and safety (WHS) issues and work practices 2.3 Develop training delivery style to suit skills of recipient 2.4 Review and amend training material prior to product, equipment or facility changes being introduced by the company 2.5 Develop training schedule to meet needs and schedules of recipients
3. Deliver training to sales and technical staff	3.1 Deliver training sessions in a systematic fashion and in a format suitable to client's needs 3.2 Monitor student performance against pre-determined criteria 3.3 Provide feedback on student performance against pre-determined criteria 3.4 Evaluate training session against pre-determined criteria on completion, and identify potential improvements
4. Complete documentation	4.1 Record session evaluation and feedback from recipients 4.2 Present report to client on effectiveness of training sessions and recommendations for improvements

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1-1.4, 2.2, 2.4, 3.2-3.4, 4.1	• Critically organises, evaluates and applies content from a range of structurally complex materials including client briefs, product and technical information and interpretation of feedback from students
Writing	1.2, 1.5, 2.1, 2.2, 2.4, 2.5,	• Generates complex written texts appropriate for a specific audience,

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	3.4, 4.1	demonstrating control over a broad range of writing styles and purposes
Oral Communication	1.1-1.3, 2.3, 3.1, 3.3, 4.2,	• Establishes and maintains complex and effective rapport with clients and students, with a depth of understanding that includes multiple and unstated meanings
Numeracy	1.4, 2.5,	• Estimates and plans time requirements for scheduling
Navigate the world of work	2.2	• Takes full responsibility for following policies, procedures and legislative requirements and identifies organisational implications of new legislation or regulation
Interact with others	1.1, 1.3, 2.3, 3.1-3.3, 4.2	• Selects, implements and seeks to improve protocols governing communications to clients and co-workers in a range of work contexts • Implements strategies for a diverse range of colleagues and clients to build rapport and foster strong relationships • Elicits feedback and provides feedback to others to improve • Recognises diversity in people and manages this diversity to improve workplace relations and practices
Get the work done	1.1, 1.2, 1.4, 1.5, 2.1, 2.2, 2.4, 2.5, 3.2, 3.4	• Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others, taking into account capabilities, efficiencies and effectiveness • Monitors progress of plans and schedules, and reviews and changes them to meet new demands and priorities • Applies systematic and analytical decision-making processes for complex and non-routine situations • Investigates new and innovative ideas as a means to continuously improve work practices and processes through consultation, formal and analytical thinking • Uses and investigates new digital technologies and applications to manage and manipulate data and communicate effectively with others, in a secure and

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		stable digital environment

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTEDU501 Develop and deliver training associated with new and modified products	ICTEDU5025A Develop and deliver training associated with new and modified products	Updated to meet standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTEDU501 Develop and deliver training associated with new and modified products

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- develop and deliver training programs for clients to operate new or modified equipment installations
- establish and use criteria to measure and report on training program effectiveness.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe equipment relative to customer requirements, customer telecommunications applications and related equipment
- describe features and applications of telecommunications products relative to customer requirements
- identify and outline common training methodologies for vendor training
- identify, locate and evaluate reference documents relevant to training and after training support.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications – Education field of work and include access to:

- suitable training resources and facilities
- relevant product information

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- applicable industry software packages.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM301 Apply simple modelling techniques

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to develop, and refine, 3-D models using simple modelling techniques and appropriate software.

It applies to individuals who support the design, development, and programming of basic digital games as part of a larger development team.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Clarify work requirements	1.1 Clarify the requirements for, and purpose of, 3-D digital modelling techniques and refer to the production documentation, WHS requirements and roles of project team members 1.2 Clarify work-flow sequences in consultation with the relevant personnel, to ensure that production schedule deadlines are met 1.3 Select the software that best suits the type of production and

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ELEMENT	PERFORMANCE CRITERIA
	delivery platform for which simple 3-D modelling techniques are being applied 1.4 Gather and analyse reference materials to help with the application of modelling techniques
2. Apply simple 3-D modelling techniques	2.1 Apply simple 3-D modelling techniques to create 3-D models 2.2 Use software features to block out models in order to determine the correct proportions related to reference materials 2.3 Manipulate software features to apply basic lighting and shaders to the models, as required 2.4 Ensure that the topology of the models allows for appropriate deformation, as required 2.5 Progressively refine, and check, the integrity of the models until they meet design requirements 2.6 Submit models to the relevant personnel for comment regarding whether production requirements have been met, and make final adjustments as required 2.7 Render and output the models in the required format, and submit to the relevant personnel by agreed deadlines 2.8 Make backup copies of files and complete workplace documentation, according to enterprise procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 1.3, 1.4, 2.4, 2.6	• Interprets documentation, diagrams, designs, objects and images to identify relevant information • Recognises and comprehends signs, symbols, pictures, jargon, abbreviations, computer generated text, numbers and letters, necessary to operate modelling applications software
Writing	2.8	• Completes the documentation necessary for work tasks and reporting according to requirements
Oral	1.1, 1.2, 1.3,	• Uses industry terminology to clarify requirements

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Communication	1.4, 2.6	and obtain information • Listens and responds to instructions, answers to questions and feedback
Numeracy	2.1, 2.2, 2.3, 2.4, 2.5, 2.7	• Adds, subtracts, multiplies and divides whole numbers, and decimals, when manipulating measurement, scale, ratio and coordinates in the development of models • Structures timeframes to work to deadlines
Navigate the world of work	2.8	• Complies with explicit organisational procedures
Get the work done	1.1-1.4, 2.1-2.8	• Makes routine decisions and implements standard procedures for routine tasks • Uses key features of specific digital systems and tools to complete routine tasks • Uses creativity and initiative in design • Understands the importance of secure information in relation to own work, and takes responsibility for data integrity and management

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTGAM301 Apply simple modelling techniques	ICAGAM301A Apply simple modelling techniques	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM301 Apply simple modelling techniques

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- clarify 3-D modelling requirements
- create 3-D digital models that:
  - demonstrate the application of simple 3-D modelling techniques
  - demonstrate the efficient use of geometry and attention to detail
  - meet production documentation requirements
- work collaboratively with the other members of the design and development team
- meet deadlines.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify 3-D digital model design techniques
- outline 3-D digital modelling techniques
- outline the stages in the production process, from the initial concept through to the finished product
- discuss the features of a range of delivery platforms
- discuss geometry as it applies to the creation of realistic 3-D digital models
- outline the issues and challenges of creating 3-D digital models
- outline work health and safety (WHS) standards, as they relate to working for periods of time on computers
- outline the roles and responsibilities of project team members in the relevant industry sector

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- discuss the use of scale, form, weight and volume in the design, and development, of 3-D digital models
- discuss basic copyright issues associated with designing and creating 3-D models.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the game development field of work, and include access to:

- the production documentation
- reference materials
- computer hardware
- industry software packages
- games engines
- file storage
- enterprise policy about WHS requirements.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM302 Design and apply simple textures to digital art

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to assess, and select, textures and shaders to develop new textures and to apply them to digital art, including 3-D models.

It applies to individuals who support the design, development and programming of basic digital games as part of a larger development team.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Clarify the design requirements, and plan the approach	1.1 Interpret the brief to clarify design, texture generation, and the delivery requirements in consultation with the client 1.2 Identify the design and technical constraints 1.3 Identify the software, media and file formats for digital imagery, texture production and manipulation 1.4 Identify the sequence of digital texturing activities in the production pipeline 1.5 Identify production workflow requirements, and develop the

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ELEMENT	PERFORMANCE CRITERIA
	production pipeline to meet client requirements
2. Assess the existing textures and shaders for suitability	2.1 Establish the underlying surface characteristics of the 3-D model to be textured and shaded 2.2 Identify basic shaders and textures with surface characteristics 2.3 Identify suitable textures from the available texture libraries 2.4 Select shaders and textures for the assignment to model 2.5 Confirm that the selections are consistent with the brief and with client requirements
3. Determine shader attributes and assign to a 3-D model	3.1 Identify and select the attributes required to achieve the desired effects on 3-D models 3.2 Determine and confirm the requirements related to lighting and rendering 3.3 Use the appropriate methods and techniques to achieve the desired shading outcome
4. Acquire new textures	4.1 Identify the desired resolution for texture, prior to acquisition 4.2 Acquire textures from an online library 4.3 Capture real-world textures using digital means 4.4 Generate the texture, using art media, or digital paint software, and then save 4.5 Ensure that the resolution of the acquired texture meets resolution requirements
5. Generate procedural textures and create a texture map	5.1 Assess the nature of the surface topology 5.2 Identify the suitable types of 3-D projection 5.3 Apply geometry where necessary 5.4 Use algorithms to simulate natural patterns, where required 5.5 Determine the texture-mapping method 5.6 Determine the projection-mapping method 5.7 Adjust the parameters to achieve desired effects
6. Apply the texture to model	6.1 Apply the texture to the model 6.2 Layer and enhance the textures to achieve the desired effects

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ELEMENT	PERFORMANCE CRITERIA
	6.3 Apply lighting to test the reaction of the textures 6.4 Apply the textures to lights, in order to achieve specified effects 6.5 Adjust the textures to achieve the final effects 6.6 Complete test renders, and confirm the outcome with the client
7. Finalise the design	7.1 Present test renders to the client for approval 7.2 Make technical or design adjustments consistent with the feedback and with budgetary constraints 7.3 Finalise shading and texturing 7.4 Save and archive files in agreed formats and repository

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 3.1, 3.2, 4.1, 4.5, 5.1, 5.2	• Interprets and comprehends information in diagrams, designs, objects, and images • Recognises and comprehends signs, symbols, pictures, jargon, abbreviations, computer generated text, numbers and letters necessary to operate complex digital art software
Oral Communication	1.1, 1.2, 1.3, 1.4, 1.5, 2.5, 3.2, 6.6, 7.1	• Uses effective questioning and listening techniques, translating digital art terminology to plain English where necessary, to clarify client requirements and obtain information • Listens and responds to instructions and feedback to ensure that the finished result meets client requirements
Numeracy	3.3, 4.1, 4.5, 5.4, 5.7, 6.2, 6.3, 6.4, 6.5, 6.6, 7.2, 7.3	• Uses whole numbers, decimals and percentages when manipulating measurement, scale, ratio, coordinates, colour, shading and other variables, in the application of texture to digital imagery • Adds, subtracts, multiplies and divides whole numbers and decimals to ensure that the project

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		meets budgetary constraints
Get the work done	1.1-1.5, 2.1-2.3, 3.1-3.3, 4.1-4.5, 6.1-6.5, 7.2, 7.3	• Makes routine decisions and implements standard procedures for routine tasks • Uses creativity and initiative in design • Uses key features of digital systems and tools to complete routine tasks • Understands the importance of secure information in relation to own work, and takes responsibility for data integrity and management

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTGAM302 Design and apply simple textures to digital art	ICAGAM302A Design and apply simple textures to digital art	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM302 Design and apply simple textures to digital art

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- comprehend design requirements
- complete texturing and shading tasks according to brief requirements
- create and apply textures to digital art
- use and optimise software components for best performance
- adhere to system requirements related to file sizes and formats
- store completed file components to software and organisational requirements
- develop textured, shaded and rendered models
- integrate texturing activities into the overall production pipeline.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- discuss camera textures and filters that can be used to achieve shading and texturing effects
- outline the features of software used for:
  - 3-D modelling
  - appropriate file sizes and formats
  - digital image manipulation
  - lighting
  - rendering
  - scanning
  - the scheduling of production activities
  - shading

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    - texturing
- describe how to interpret design, texturing, and shading briefs
- discuss digital image capture, using cameras and scanners
- describe shader attributes and their optimisation
- describe shader and texture mapping, and projection
- discuss texturing and shading requirements for games.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the game development field of work, and include access to:

- the appropriate computer hardware, software and peripheral devices
- models and scenes to be shaded and textured
- style shots
- rendering briefs or specifications
- the schedules.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM303 Review and apply the principles of animation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to review the traditional animation process and design and produce 3-D animated sequences using modelling and animation software.

It applies to individuals who support the design, development and programming of basic digital games as part of a larger development team.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare the traditional animation process, and the sequence of its component parts	1.1 Describe the traditional animation process and its application in the production of quality 3-D animation 1.2 Describe the twelve principles of animation and their application in the production of quality 3-D animation 1.3 Identify the components that are essential to producing quality 3-D animation
2. Prepare scene layout	2.1 Describe and demonstrate the scene layout techniques used

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ELEMENT	PERFORMANCE CRITERIA
and storyboarding techniques	in traditional animation 2.2 Describe and demonstrate the storyboarding techniques used in traditional animation
3. Nominate appropriate animation keys in a proposed animation sequence	3.1 Describe the key animation process 3.2 Produce sample key drawings 3.3 Identify the criteria used for the selection of animation keys 3.4 Select the appropriate animation keys in a proposed animation sequence
4. Create a short animation	4.1 Produce shot animation key drawings 4.2 Produce line image recordings of drawings 4.3 Create a short, animated sequence
5. Apply traditional animation principles to a 3-D animation	5.1 Produce a 3-D animated sequence, employing traditional animation principles, using 3-D modelling and animation software 5.2 Save and store, or archive, an animated sequence onto appropriate equipment or media

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	4.3, 5.1	• Recognises and comprehends a large range of signs, symbols, pictures, jargon, abbreviations, computer generated text, numbers and letters, necessary to operate complex animation software
Oral Communication	1.1, 1.2, 2.1, 2.2, 3.1	• Uses industry specific terminology to describe animation principles and processes
Numeracy	3.2, 3.3, 3.4, 4.1, 4.2, 4.3, 5.1, 5.2	• Uses positive and negative whole numbers, decimals, degrees and percentages when setting measurement, scale, coordinates, colour, shading, and other parameters in the development of animations
Get the work	3.2, 3.4, 4.1-4.3,	• Follows clearly defined instructions, monitors own

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done	5.1, 5.2	progress and seeks assistance, when necessary • Makes routine decisions and implements standard procedures for routine tasks • Uses creativity and initiative in design • Uses key features of specific digital systems and tools to complete routine tasks • Understands the importance of secure information in relation to own work and takes responsibility for data storage

Range of Conditions

This section specifies different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Twelve principles of animation must include:	• anticipation • appeal • arcs • exaggeration • follow through and overlapping action • secondary action • slow in and slow out • solid drawing • squash and stretch • staging • straight ahead action and pose to pose • timing.

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTGAM303 Review and apply the principles of animation	ICAGAM303A Review and apply the principles of animation	Updated to meet Standards for Training Packages. Minor edits to clarify	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
		intent of the performance criteria.	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM303 Review and apply the principles of animation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- create a short animation using traditional animation processes and a range of 3-D modelling and animation software.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe a production brief
- discuss the use of animation keys
- discuss the application of traditional animation processes to digital animation
- outline the process for:
  - the development and recording of ideas
  - the production of 3-D animations
  - the production of a storyboard
  - the production of scene layout
  - filling media and paper-based assets
- outline the principles of animation
- discuss the scheduling of production components.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the game development field of work, and include access to appropriate computer hardware, software and peripheral devices.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM418 Use simple modelling for animation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to plan and produce an animated sequence.

It applies to individuals who support the design, development and programming of basic digital games as part of a larger development team.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Clarify the animation requirements of models	1.1 Clarify the animation requirements and design specifications for the model, in consultation with the relevant personnel, and according to the production documentation 1.2 Examine the most appropriate animation techniques for the animation, in order to determine which modelling techniques to use 1.3 Identify the file format and delivery platform for animated sequences

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Identify factors that may influence the animation design approach 1.5 Clarify work flow sequences, in consultation with the relevant personnel, to ensure that production schedule deadlines are met
2. Plan the approach	2.1 Research animations, artworks and other creative sources that may inspire visual design ideas 2.2 Generate a range of animation ideas that are technically feasible, respond to briefs, and provide creative solutions to all design issues 2.3 Present animation ideas to the relevant personnel using appropriate design techniques 2.4 Adjust the approach to incorporate feedback, and agree on final design concepts 2.5 Discuss and select animation software with the relevant personnel to ensure that the animated sequences of the model meet specified outcomes 2.6 Analyse audio assets supplied for animations, as required
3. Produce animated sequences for review	3.1 Create animations of models using animation and modelling techniques to suit design requirements 3.2 Apply basic animation principles, screen principles, visual design principles and communication principles 3.3 Apply real-world camera techniques to the virtual cameras used in the animation 3.4 Render the completed animated sequences 3.5 Save and store the animated sequences using appropriate output file formats, standard naming conventions, and version-control protocols 3.6 Present the animated sequences of simple models to the relevant personnel for evaluation by agreed deadlines
4. Finalise animated sequences	4.1 Review the animated sequences to assess creative solutions to the design briefs, appropriateness to users or audience, and technical feasibility 4.2 Discuss and confirm with the relevant personnel, additional requirements or modifications, and complete any changes as required

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 1.3, 1.4, 2.1, 2.4, 2.5, 4.2	• Identifies, evaluates and interprets texts containing complex technical, 3-D modelling and animation terminology to clarify requirements and research ideas • Interprets and comprehends computer generated text, audio tracks, abbreviations, symbols, icons, numbers and letters necessary to use 3-D modelling and animation software
Oral Communication	1.1, 1.5, 2.1, 2.3, 2.4, 2.5, 3.6, 4.1, 4.2	• Participates in verbal exchanges of ideas and solutions, using a range of animation and 3-D modelling terminology, and effective listening and questioning techniques to clarify information • Presents designs speaking clearly and concisely, using specific terminology and appropriate non-verbal features
Numeracy	1.1, 1.4, 1.5, 2.2, 2.5, 2.6, 3.1, 3.2, 3.3, 3.4, 3.5, 4.1	• Uses whole numbers, decimals and percentages relevant to file size, software and hardware specifications, measurement, scale, form, weight, volume, colour, shading, and other attributes/variables in the development of animated sequences
Get the work done	All	• Takes responsibility for planning, sequencing and prioritising tasks to achieve required outcomes • Makes routine decisions and implements standard procedures for routine tasks, using formal decision-making processes for more complex and non-routine situations • Addresses less predictable problems and uses problem-solving processes to determine solutions • Contributes to improvement of work practices by applying the basic principles of analytical and lateral thinking • Uses digital technologies and systems to access information, enter data and code, present information and communicate with others

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTGAM418 Use simple modelling for animation	ICAGAM418A Use simple modelling for animation	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM418 Use simple modelling for animation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- create digital animated sequences of a model that:
  - demonstrates the principles of simple model animation, basic screen, visual design and communication
  - meets the technical requirements of specific platforms
  - satisfies the design brief and client requirements
  - meets the production deadlines.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline basic digital animation techniques
- outline the principles of animation, screen, visual design and communication in relation to the production of animated sequences
- describe the features of a range of delivery platforms for animated sequences
- discuss the issues and challenges that arise in the context of creating models for digital animations
- outline the stages in the production process from initial design through to finished product
- outline the roles and responsibilities of project team members.

Assessment Conditions

conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the game development field of work, and include access to:

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- appropriate computer hardware, software and games engines
- file storage
- design specifications and production documentation.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTGAM419 Build a database to support a computer game

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to design, and to implement, a relational database for the management of the persisted- state world of a computer game.

It applies to individuals who work as game programmers or junior analyst programmers in the digital and interactive games industry, either as small independent specialists, or as part of a larger team.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Verify the database model	1.1 Verify that the game architecture and system implementation requirements have been addressed by the proposed database architecture 1.2 Correlate data model entities and their attributes with the game artefacts, and the game design requirements 1.3 Verify that the entity relationships defined in the data model implement the game-design and game-play rules

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Verify the estimates of the amounts of data storage required, and the data types defined by the data model 1.5 Document design inconsistencies 1.6 Review the database model and address, and correct any inconsistencies 1.7 Define the database test data
2. Create the physical database design	2.1 Implement the conceptual data model design as a physical database design 2.2 Determine the default database file size, according to the data model storage estimates 2.3 Determine game data input and output workload estimates 2.4 Determine the reliability and performance requirements 2.5 Define the minimum hardware requirements to support the input and output workload and reliability or performance requirements 2.6 Configure the database management system in order to use minimum hardware requirements 2.7 Refine and confirm the database test data
3. Implement the physical database prototype	3.1 Write structured query language (SQL) scripts to create physical database files according to the design requirements 3.2 Write SQL scripts to create database tables 3.3 Implement the primary key constraints 3.4 Implement the foreign key constraints 3.5 Define, and script, stored procedures for selecting, inserting, updating and deleting data 3.6 Define and script insert statements for test data 3.7 Execute SQL scripts and database, including test data
4. Test the database and document results	4.1 Document the entity integrity tests, and results 4.2 Document the referential integrity tests, and results 4.3 Document the input and output performance tests, and results 4.4 Document the stored procedures tests, and results
5. Review, evaluate and correct database performance	5.1 Review the test result deficiencies 5.2 Define, evaluate and test the deficiencies, and ensure that corrective measures are implemented

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ELEMENT	PERFORMANCE CRITERIA
	5.3 Implement corrections to the database

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 1.3, 1.4, 1.6, 2.2, 2.3, 2.4, 2.5, 2.7, 5.1	• Interprets and analyses documents containing complex games-design and database-architecture terminology, to determine database requirements and identify design inconstancies • Interprets and comprehends a large range of diagrams, flow charts, code, syntax, icons, symbols, text, numbers and letters necessary to design and develop a database
Writing	1.5, 1.7, 2.1, 3.1, 3.2, 3.5, 3.6, 3.7, 4.1, 4.2, 4.3, 4.4	• Uses correct spelling and grammar, plain English, specific terminology and appropriate document layout, when documenting database test data and test results • Uses the appropriate programming code, syntax and conventions to develop the database
Oral Communication	1.1, 1.2, 1.3, 1.4, 2.2, 2.3, 2.4	• Employs effective listening and open-questioning techniques to clarify design requirements and project scheduling, and to obtain feedback
Numeracy	1.1-1.7, 2.1-2.7, 3.1-3.7	• Uses a wide range of applied mathematical calculations and functions to design, develop, and evaluate the database
Get the work done	All	• Plans a range of routine, and some non-routine, tasks, aiming to achieve required outcomes efficiently and effectively • Makes a range of critical and non-critical decisions in relatively complex situations, using analytical processes to decide on appropriate courses of action • Evaluates outcomes to identify opportunities for improvement within own work context • Utilises a broad range of features within applications to complete required tasks

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTGAM419 Build a database to support a computer game	ICAGAM419A Build a database to support a computer game	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTGAM419 Build a database to support a computer game

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- interpret a conceptual database model
- create a database from a conceptual model, that allows for the persistence of state data for a computer game
- evaluate, and improve, the performance of a database built to support a computer game.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify computer hardware specifications and performance required to support database development
- discuss the creation, use and testing of stored procedures
- explain why input and output parameters are required
- explain database stress testing and stress testing software
- discuss the principles of database testing methodologies
- describe object-oriented database management systems
- discuss the similarities and difference between relational database management systems:
  - IBM DB2
  - Microsoft Access
  - Microsoft SQL (MS SQL) server
  - MySQL
  - Oracle
  - Postgre Structured Query Language (Postgre SQL)

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- discuss relational database modelling building blocks and theory, including attributes, entity relationship modelling and normalisation of database tables
- discuss relationship cardinality and connectivity:
  - 1:1
  - 1:M
  - M:N
- outline the features, and functions, of structured query language (SQL), including data definition language and data manipulation language
- discuss the evolution of relational database management systems and their relationship to the flat file, hierarchical, and network data storage legacy of games
- outline the important functions of a relational database management system within the context of a computer game
- interpret data access languages, such as SQL and language-integrated query (LINQ)
- interpret data application programming interfaces (APIs) including:
  - ADO.Net
  - data integrity
  - disaster recovery and backups
  - data dictionary
  - data storage
  - security requirements of the data
  - transforming and presenting the data
- discuss the importance of data models
- describe the different types of data models, including Chen and Crow's Foot models
- describe the relationship between game-play rules and the modelling of the database structure.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the game development field of work, and include access to:

- computer-aided software engineering and modelling tools
- a relational or object-oriented database management system
- performance testing and analysis software for selected database management system/ game architecture specifications
- the game design and requirements documentation
- the client or server hardware
- networking infrastructure sufficient to simulate the game architecture specifications.

Assessors must satisfy NVR/AQTF assessor requirements.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT101 Operate a personal computer

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to operate a personal computer (PC) in a home or small office environment, including accessing files with application programs, sending and retrieving emails, using the internet, using peripheral devices and applying basic security procedures and power management settings.

It applies to individuals who require entry level information and communications technology (ICT) knowledge and literacy skills to perform a range of simple operation tasks.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to use the personal computer	1.1 Identify physical components and associated peripheral devices of the personal computer to become familiar with the available network 1.2 Check physical connectivity of devices to ensure correct operation and performance 1.3 Boot up and follow procedures to activate the computer

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ELEMENT	PERFORMANCE CRITERIA
2. Manage computer configurations	2.1 Alter the computer settings to best suit the user 2.2 Configure power management settings to minimise power consumption as an environmentally sustainable measure 2.3 Identify operating system and the application programs loaded on the computer to determine computer capability 2.4 Conduct basic software installation and removal to improve computer capability 2.5 Navigate and manipulate desktop environment to create and customise desktop icons and access application programs
3. Access and use basic application programs	3.1 Open a folder with file documents containing basic office applications, make minor changes and save in a different folder 3.2 Send and retrieve a simple email message using the desktop icon to communicate with other parties 3.3 Access the internet using the web browser to view and conduct basic web information search 3.4 Use firewall and antivirus and malware scans to reduce security risks and threats in the system
4. Access and use basic peripheral devices	4.1 Access external storage devices to retrieve, copy, move and save information in different media and locations 4.2 Use printer settings on an installed printer to print a document 4.3 Access audio-visual (AV) devices to view and play a multimedia file
5. Shut down computer	5.1 Back up important documents and programs to minimise risk of data loss 5.2 Save any work to be retained and close open application programs 5.3 Shut down computer and switch off any unused peripheral devices

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

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Skill	Performance Criteria	Description
Reading	1.3, 2.1-2.5, 3.2, 3.3	• Recognises textual information to determine and complete technical functions
Writing	3.1- 3.3, 4.1	• Enters information using familiar text types in a format appropriate to environment
Get the work done	1.1-1.3, 2.1-2.5, 3.1-3.4, 4.1-4.3, 5.1-5.3	• Plans routine tasks with familiar goals and outcomes, taking some limited responsibility for decisions regarding sequencing • Understands the purpose and specific functions of common digital tools used in work contexts • Implements basic security requirements related to own tasks • Recognises and responds to predictable routine problems related to role in the immediate work context

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTICT101 Operate a personal computer	ICAICT101A Operate a personal computer	Updated to meet Standards for Training Packages. Minor edits to clarify intent of performance criteria	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT101 Operate a personal computer

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- use hardware and software
- navigate around the desktop, using features to perform tasks
- save results of work.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify basic parts of a computer and various hardware components
- explain commonly used software operation and application packages
- name basic security functions and computer functions
- list a range of peripheral devices that can be used with a personal computer
- describe common computer storage devices.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general information and communications technology (ICT) industry, and include access to:

- appropriate learning and assessment support when required
- personal computer, including printer, mouse, keyboard and monitor
- use of basic software currently used in industry.

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Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT102 Operate word-processing applications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to operate word- processing applications and perform basic operations, including creating and formatting documents, creating tables and printing labels.

It applies to individuals in the workplace using fundamental knowledge of word-processing under direct supervision or with limited responsibility.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Apply workplace health and safety (WHS) practices	1.1 Use workplace ergonomic work practices and strategies 1.2 Organise work area to ensure an ergonomic work environment
2. Create documents	2.1 Open word-processing application, create document and add data according to information requirements 2.2 Use document templates as required

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ELEMENT	PERFORMANCE CRITERIA
	2.3 Use simple formatting tools when creating the document 2.4 Save document to directory
3. Customise basic settings to meet page layout conventions	3.1 Adjust page layout to meet information requirements 3.2 Open and view different toolbars 3.3 Change font format to suit document purpose 3.4 Change alignment and line spacing according to document information requirements 3.5 Modify margins to suit the document purpose 3.6 Open and switch between several documents
4. Format documents	4.1 Use formatting features and styles as required 4.2 Highlight and copy text from another area in the document or from another active document 4.3 Insert headers and footers to incorporate necessary data 4.4 Save document in another file format 4.5 Save and close document to a storage device
5. Create tables	5.1 Insert standard table into document 5.2 Change cells to meet information requirements 5.3 Insert and delete columns and rows as necessary 5.4 Use formatting tools according to style requirements
6. Add images	6.1 Insert appropriate images into document and customise as necessary 6.2 Position and resize images to meet document formatting needs
7. Print documents	7.1 Preview document in print preview mode 7.2 Select basic print settings 7.3 Print document or part of document from printer

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

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Skill	Performance Criteria	Description
Reading	2.1, 3.1, 3.4, 7.1	• Interprets specific information to determine and complete work required
Writing	2.1, 4.3	• Prepares simple correspondence that incorporates key information in a format and style relevant to requirements
Navigate the world of work	1.1	• Takes some personal responsibility for adherence to regulatory requirements
Get the work done	1.2, 2.1, 3.1-3.6, 4.1-4.5, 5.1-5.4, 6.1, 6.2, 7.2, 7.3	• Plans routine tasks with familiar goals and outcomes, taking some limited responsibility for decisions regarding sequencing • Understands the purpose and specific functions of common digital tools used in work contexts • Recognises and responds to common operational problems when using word-processing applications

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTICT102 Operate word-processing applications	ICAICT102A Operate word-processing applications	Updated to meet Standards for Training Packages. Minor edits to clarify intent of performance criteria.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT102 Operate word-processing applications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- follow organisational ergonomic work health and safety (WHS) requirements and practices
- create, open and retrieve documents using customised basic settings
- format documents by creating tables and adding text, objects and images
- save and prints documents.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe formatting styles and their effect on formatting, readability and appearance of documents
- identify organisational requirements for ergonomics, including work periods and breaks
- select organisational style guide to use
- outline purpose, use and function of word-processing software.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general information and communications technology (ICT) industry, and include access to:

- a personal computer and printer
- word-processing software currently used in industry

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- documents detailing organisational style guide or policy and work health and safety (WHS) requirements
- data suitable for use with word-processing packages.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT103 Use, communicate and search securely on the internet

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to connect to the internet, securely send and receive emails, search the internet using web browsers and interact securely and in a socially responsible manner with a range of different internet sites.

It applies to individuals who use business technology to perform a range of routine tasks in the workplace or home office with limited responsibility.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Connect to and access the internet	1.1 Connect to internet via existing internet connection and confirm functionality 1.2 Open internet browser and set home page of personal choice by setting internet options 1.3 Ensure internet browser software security 1.4 Adjust display of the internet browser to suit personal requirements

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ELEMENT	PERFORMANCE CRITERIA
	1.5 Modify toolbar to meet user and internet browser needs 1.6 Access a particular website, note privacy and other conditions of use, and retrieve data 1.7 Use socially responsible behaviour when sharing information on the internet 1.8 Enter uniform resource locator (URL) in address line of internet browser
2. Use email for communications	2.1 Open email application package, create new email message and add addressees 2.2 Compose text of an email message according to organisational guidelines, and spell check and edit text as required 2.3 Create and add an automatic signature for the user 2.4 Attach files to email message where required 2.5 Determine and set priority and send email message 2.6 Reply to and forward a received message using available features 2.7 Open and save an attachment to the relevant folder 2.8 Search for, sort and save email message using available settings 2.9 Adjust email accounts to restrict and quarantine possible email security problems 2.10 Print email message as required
3. Search the internet	3.1 Review organisational guidelines on internet access 3.2 Open internet application and locate and access a search engine on the internet, and define search expressions based on data required 3.3 Enter appropriate key words into the search engine to locate desired information 3.4 Refine a search depending on outcomes of original search 3.5 Save search expression results and present them in a report according to information requirements 3.6 Create a bookmark within the internet browser or a link for the required web page for the key results 3.7 Save key results in a bookmark folder 3.8 Modify internet browser options for printing and print a

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ELEMENT	PERFORMANCE CRITERIA
	web page 3.9 Close internet browser
4. Access and use consumer specific sites on the internet	4.1 Identify, access and review information specific sites to gain consumer information 4.2 Identify and use internet application sites to lodge details and gain access and information 4.3 Access and use online forms on the internet
5. Undertake online transactions	5.1 Access online transaction site 5.2 Ensure security of transaction site 5.3 Enter required information into fields on merchant's website 5.4 Ensure pop-up dialog boxes, prompts or feedback mechanisms are completed 5.5 Enter, check and make changes to preferred transaction options 5.6 Complete online transaction 5.7 Record and archive receipts according to business processes 5.8 Close down and leave transaction process
6. Conduct an advanced search	6.1 Use search tools and advanced search features 6.2 Use Boolean search techniques when required to enhance the search 6.3 Use multiple or meta-search tools with a range of key words 6.4 Use search engines particular to a field of knowledge to refine the outcome 6.5 Access related virtual community sites and newsgroups, and note their objectives and operational arrangements 6.6 Conduct a search with domain names to refine the search
7. Use information that has been located	7.1 Cross reference information found by using several websites to determine accuracy of information 7.2 Check date that website was last updated or properties of website to determine currency of information 7.3 Determine website authority by looking at copyright statements, privacy statements and organisational information 7.4 Save and print information found in different file forms

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.3, 1.6, 2.1, 2.6-2.8, 3.1, 3.2, 4.1-4.3, 5.1, 5.2, 5.4, 5.5, 6.5, 7.1-7.3	• Interprets textual information and instructions to efficiently undertake the task
Writing	2.1-2.3, 3.5, 5.3, 5.4, 5.7	• Uses required format to accurately enter information specific to requirements • Composes short and specific messages using format, grammar and language appropriate to audience
Navigate the world of work	1.7	• Understands main responsibilities and boundaries of own role
Get the work done	1.1-1.8, 2.1, 2.3-2.10, 3.2-3.9, 4.1-4.3, 5.1-5.8, 6.1-6.6, 7.4	• Plans routine tasks with familiar goals and outcomes, taking limited responsibility for decisions regarding sequencing • Understands the purpose and specific functions of common digital tools used in work contexts • Recognises and responds to common operational problems when using web browsers • Takes responsibility for routine low-impact decisions within familiar situations • Implements basic security requirements related to own tasks

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTICT103 Use, communicate and search securely on the internet	ICAICT103A Use, communicate and search securely on the internet	Updated to meet Standards for Training Packages	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT103 Use, communicate and search securely on the internet

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- connect to and access the internet
- send and receive emails
- secure internet access and email communications
- use search tools to locate information
- use different internet search techniques
- research and select appropriate website
- undertake online transactions
- assess the accuracy, currency, authority and reliability of the site and information located.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must :

- list basic technical terminology related to reading help files and prompts
- describe the basics of copyright and privacy statements
- explain different types of messages that occur, including error messages and messages to install plug-ins
- list different types of search engines and web browsers
- list procedures for using email applications
- list procedures for evaluating and assessing the authority, reliability and authenticity of information
- outline internet search functions
- describe internet speed and traffic loads related to times of accessing the internet
- describe the makeup and structure of internet addresses

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- list organisational guidelines on internet and email use (web etiquette or netiquette)
- describe business process related to online transactions
- describe web browser update techniques
- explain what key words and bookmarks are used for.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general information and communications technology (ICT) industry, and include access to:

- a personal computer or digital device with internet
- search engines currently used in industry
- organisational policies on internet usage.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT104 Use digital devices

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to use a range of digital devices, such as a digital camera, video camera, or personal digital assistant (PDA) device.

It applies to individuals who require entry level information and communications technology (ICT) knowledge and literacy skills to support their work in a home office or small office environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to use the digital device	1.1 Review the instruction manual and ensure identified components are available 1.2 Identify the physical components of the digital device 1.3 Turn on and follow access procedures to activate the digital device 1.4 Alter the digital device settings to best suit intended use 1.5 Configure power management settings where appropriate to

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ELEMENT	PERFORMANCE CRITERIA
	minimise power consumption, as an environmentally sustainable measure
2. Set up and use the digital device	2.1 Identify and set the basic operating, security and menu settings 2.2 Navigate and manipulate the screen environment 2.3 Customise screen icons and access to applications where applicable 2.4 Use the digital device, and save and edit output where applicable 2.5 Identify more advanced features available and use as required
3. Access and use basic connectivity devices	3.1 Connect to external digital devices, such as computer devices or storage devices, to retrieve, copy, move and save information 3.2 Check physical connectivity of computer devices or storage devices to ensure operation and performance 3.3 Connect to a printer either through a computer device or directly, and use printer settings and print data 3.4 Access audio-visual devices to view and play a multimedia file
4. Shut down digital device	4.1 Save current work and back up important data 4.2 Close open programs on the digital device and any computer device or storage device 4.3 Shut down digital devices, according to manufacturer instructions

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.5, 2.1-2.5, 3.1, 3.4, 4.3	• Reviews on-line and hard-copy text, and interprets and comprehends symbols, text, numbers and letters to determine and adhere to requirements

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Get the work done	1.1-1.5, 2.1-2.5, 3.1-3.4, 4.1-4.3	• Understands the purposes, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine tasks • Plans a range of routine tasks with familiar goals and outcomes

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTICT104 Use digital devices	ICAICT104A Use digital devices	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT104 Use digital devices

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- turn on a digital device
- use the menu features and navigate a graphical user interface
- use device features to perform tasks
- save the results of work.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must :

- outline the capabilities and connectivity requirements of relevant:
  - audio-visual devices
  - peripheral devices
  - storage devices
- list basic security functions
- explain basic software operation and associated applications
- explain digital device functions
- explain digital device settings.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general information and communications technology (ICT) industry and include access to:

- digital devices

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- computer
- storage devices
- printer
- device-specific application currently used in industry.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT105 Operate spreadsheet applications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to use spreadsheet applications, including creating spreadsheets, formatting data, incorporating charts and objects, and printing spreadsheets.

It applies to individuals who perform a range of routine tasks in the workplace using a fundamental knowledge of spreadsheets under direct supervision or with limited responsibility.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Create spreadsheets	1.1 Open the spreadsheet application, create spreadsheet files and enter numbers, text and symbols into cells according to information requirements 1.2 Enter simple formulas and functions using cell referencing when required 1.3 Correct formulas when error messages occur 1.4 Use a range of common tools during spreadsheet

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ELEMENT	PERFORMANCE CRITERIA
	development 1.5 Edit columns and rows within the spreadsheet 1.6 Use the auto-fill function to increment data where required 1.7 Save the spreadsheet to a folder on a storage device
2. Customise basic settings	2.1 Adjust page layout to meet user requirements or special needs 2.2 Open and view different toolbars 2.3 Change font settings so they are appropriate for the document purpose 2.4 Change alignment options and line spacing according to spreadsheet formatting features 2.5 Format cell to display different styles as required 2.6 Modify margin sizes to suit the purpose of the spreadsheets 2.7 View multiple spreadsheets concurrently
3. Format spreadsheet	3.1 Use formatting features as required 3.2 Copy selected formatting features from another cell in the spreadsheet or from another active spreadsheet 3.3 Use formatting tools as required within the spreadsheet 3.4 Align information in a selected cell as required 3.5 Insert headers and footers using formatting features 3.6 Save spreadsheet as another file type 3.7 Save to storage device and close spreadsheet
4. Incorporate object and chart in spreadsheet	4.1 Import an object into an active spreadsheet 4.2 Manipulate imported object by using formatting features 4.3 Create a chart using selected data in the spreadsheet 4.4 Display selected data in a different chart 4.5 Modify chart using formatting features
5. Print spreadsheet	5.1 Preview spreadsheet in print preview mode 5.2 Select basic printer options 5.3 Print spreadsheet or selected part of spreadsheet 5.4 Submit the spreadsheet to appropriate person for approval or feedback

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 2.1	• Interprets and comprehends symbolic, textual and numerical information and data • Identifies data specifically needed for the spreadsheet from information received
Writing	1.1, 1.2, 1.5, 3.5, 4.5	• Enters both written and verbally received information and data into a format suitable for spreadsheet analysis • Selects vocabulary, terminology and naming conventions suitable for the spreadsheet
Oral Communication	1.1, 2.1, 5.4	• Uses simple and relevant language with listening and questioning skills to confirm user requirements and elicit feedback
Numeracy	1.2, 4.3, 4.4	• Adds, subtracts, multiplies and divides whole numbers and decimals, identifying and selecting the correct formulas and functions to use • Applies the order of operations in calculations • Identifies and comprehends the specific numeric data needed to create charts
Interact with others	5.4	• Begins to use some routine forms of written communication relevant to immediate work role, with a limited awareness of requirements and expectations
Get the work done	1.1-1.7, 2.1-2.7, 3.1-3.7, 4.1-4.5, 5.1-5.3	• Plans routine tasks with familiar goals and outcomes, taking limited responsibility for decisions regarding sequencing • Understands the purpose and specific functions of common digital tools used in work contexts • Takes responsibility for routine low-impact decisions within familiar situations

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTICT105 Operate spreadsheet applications	ICAICT105A Operate spreadsheet applications	Updated to meet Standards for Training Packages. Minor edits to clarify intent of performance criteria.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT105 Operate spreadsheet applications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- create spreadsheets
- customise basic settings
- format spreadsheets
- create basic formulas
- insert objects and charts in spreadsheets
- save and print spreadsheets.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- list basic technical terminology related to reading help files and prompts
- explain the effect of formatting and appearance on the readability and usability of spreadsheets
- outline log-in procedures relating to accessing a personal computer (PC)
- describe the purpose, use and function of spreadsheet applications.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general information and communications technology (ICT) industry, and include access to:

- a personal computer (PC) and printer
- spreadsheet software currently used in industry
- documents detailing organisational style guide and policy
- documents or information containing data suitable for creating spreadsheets.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT106 Operate presentation packages

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to perform basic tasks using a presentation application package, and includes creating, formatting and adding effects to presentations.

It applies to individuals employed in a range of work environments who need to be able to present a set range of data in a simple and direct format.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Create presentations	1.1 Open presentation package and create a simple design for a presentation according to organisational requirements 1.2 Open blank presentation and add text and graphics 1.3 Apply existing styles within a presentation 1.4 Use presentation template and slides to create a presentation 1.5 Use various tools to improve the look of the presentation 1.6 Save presentation to the appropriate storage device and

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ELEMENT	PERFORMANCE CRITERIA
	folder
2. Customise basic settings	2.1 Adjust display to meet user requirements 2.2 Open and view different toolbars to view options 2.3 Ensure font settings are appropriate for the presentation purpose 2.4 View multiple slides at once
3. Format presentations	3.1 Use and incorporate organisational charts and bulleted lists, and modify as required 3.2 Add objects and manipulate to meet presentation purposes 3.3 Import objects and modify for presentation purposes 3.4 Modify slide layout, including text and colours, to meet presentation requirements 3.5 Use formatting tools as required within the presentation 3.6 Duplicate slides within and across a presentation 3.7 Reorder sequence of slides and delete slides for presentation purposes 3.8 Save presentation in another format 3.9 Save to storage device and close presentation
4. Add slide show effects	4.1 Incorporate pre-set animation and multimedia effects into presentation as required to enhance the presentation 4.2 Add slide transition effects to presentation to ensure smooth progression through the presentation 4.3 Test presentation for overall effect 4.4 Use onscreen navigation tools to start and stop slide show or move between different slides as required
5. Print presentation and notes	5.1 Select appropriate print format for presentation 5.2 Select preferred slide orientation 5.3 Add notes and slide numbers 5.4 Preview slides and run spell check before presentation 5.5 Print selected slides and submit presentation to appropriate person for feedback

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1,5, 2.1, 4.3, 5.4	• Reviews on-line and hardcopy text, and identifies relevant organisational and job requirements • Interprets and comprehends symbols, text, numbers and letters necessary for operating computer hardware and software
Writing	1.2, 5.3	• Uses appropriate terminology and plain English to enhance the presentation and add notes
Oral Communication	1.1, 2.1, 5.5	• Uses effective questioning and listening techniques, and simple and relevant terminology to clarify requirements and obtain feedback
Numeracy	3.7, 4.1	• Counts, adds and subtracts whole numbers and fractions for sequencing and timing purposes
Interact with others	5.5	• Begins to use routine forms of written communication relevant to immediate work role with a limited awareness of requirements and expectations
Get the work done	1.1-1.6, 2.1-2.4, 3.1-3.9. 4.1-4.4, 5.1, 5.4, 5.5	• Plans routine tasks with familiar goals and outcomes, taking limited responsibility for decisions regarding sequencing • Understands purpose and specific functions of common digital tools used in work contexts • Takes responsibility for routine, low-impact decisions within familiar situations

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTICT106 Operate presentation packages	ICAICT106A Operate presentation packages	Updated to meet Standards for Training Packages.	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
		Minor edits to clarify intent of performance criteria.	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT106 Operate presentation packages

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- create, format and prepare presentations for distribution and display
- customise basic settings
- add slide show effects.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- list basic technical terminology to read help files and prompts
- outline the different types of:
  - formal and informal presentations
  - audience
- explain the effect of design and formatting on the readability and usability of presentations
- outline presentation pitfalls
- identify suitable presentation effects for different audiences.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general information and communications technology (ICT) industry, and include access to:

- a personal computer (PC) and printer
- presentation software currently used in industry

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- documents detailing organisational style guide and policy.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT107 Use personal productivity tools

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to use the features and components of a range of personal productivity tools.

It applies to individuals who perform routine tasks in the workplace and use a range of current technology based personal productivity tools, under direct supervision or with limited responsibility.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Use calendar features	1.1 Navigate within the calendar of the personal productivity tool and schedule events and appointments 1.2 Set a reminder and customise the reminder 1.3 Customise the calendar views, menus and toolbars, and work within different views 1.4 Delete events and appointments 1.5 Customise the calendar's print options and print the calendar

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ELEMENT	PERFORMANCE CRITERIA
	according to format requirements
2. Use contact management	2.1 Create, edit and delete contacts as required, recording information in the appropriate fields 2.2 Use contact information for email purposes according to organisational policies related to privacy 2.3 Group contacts into categories that are consistent and meaningful
3. Use additional features	3.1 Link activities and contacts when required 3.2 Use expense sheets, search facilities, notes and email when appropriate 3.3 Integrate the above features with other applications or the calendar and contacts list

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.4, 2.1, 2.2	• Interprets and comprehends a large range of signs, symbols, pictures, text, numbers and letters necessary to operate a range of personal productivity tools • Interprets instructions containing basic words and sentence structures
Writing	1.1, 1.2, 2.1, 2.2, 3.2	• Enters written information using simple sentence structure, correct terminology, and writing conventions suitable for personal productivity tools
Numeracy	1.1, 1.2, 3.2	• Counts, adds, subtracts, multiplies and divides whole numbers and fractions and decimals to schedule appointments and use expense sheets
Get the work done	1.1-1.5, 2.1-2.3, 3.1-3.3	• Follows routine procedures for using digital technology to enter, store and retrieve information directly relevant to role • Understands the purpose and specific functions of common digital tools used in work contexts • Plans routine tasks with familiar goals and outcomes, taking limited responsibility for decisions regarding

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		sequencing and timing

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTICT107 Use personal productivity tools	ICAICT107A Use personal productivity tools	Updated to meet Standards for Training Packages. Minor edits to clarify intent of performance criteria.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT107 Use personal productivity tools

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- use the calendar of the personal productivity tool to schedule events and appointments
- create, edit and delete contacts
- use the additional features of a particular personal productivity tool and software.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline organisational policies regarding:
  - email list
  - internet connection and usage policy
  - web etiquette
  - calendar and scheduling tools.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general information and communications technology (ICT) industry and include access to:

- a personal productivity device
- organising software currently used in industry
- organisational policies on internet usage.

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Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT108 Use digital literacy skills to access the internet

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to safely and securely use the internet to undertake basic interactive communication.

It applies to individuals who locate, organise, understand, evaluate and analyse information using digital technology in a range of different areas.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Operate hardware at a basic level	1.1 Identify hardware components required to connect to the Internet 1.2 Set up and check physical connectivity of devices 1.3 Use hardware components and comply with work health and safety (WHS) guidelines
2. Ensure safe and secure online access	2.1 Connect and access relevant internet sites 2.2 Provide an appropriate level of personal information to

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ELEMENT	PERFORMANCE CRITERIA
	maintain privacy and security 2.3 Comply with copyright and intellectual property legislation 2.4 Ensure an understanding of socially responsible behaviour 2.5 Assess the legitimacy of online requests to make an informed decision 2.6 Interpret and respond to security notifications that display due to browser software security settings or internet use 2.7 Assess email status and determine email security 2.8 Provide appropriate information to manage digital footprint 2.9 Assess security of payments 2.10 Back up data as required through downloading to an external backup device
3. Research and analyse online information	3.1 Identify and use search engines to access relevant internet sites 3.2 Search and find relevant information or content 3.3 Refine search to increase relevance of information or content 3.4 Navigate a website to access the information or content required 3.5 Assess payment requirements to make sound financial decisions 3.6 Analyse the usefulness and accuracy of located information
4. Make transactions and participate online	4.1 Create, register, manage and secure an account 4.2 Observe appropriate user protocol online 4.3 Make secure transactions and identify methods of internet fraud 4.4 Identify and invite relevant friends, groups and pages to own website
5. Use applications and manipulate files	5.1 Use basic application skills 5.2 Incorporate attachments to documents 5.3 Back up files to external storage devices 5.4 Upload relevant components to a website 5.5 Download pictures and videos to an external device

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	2.3, 2.5-2.7, 3.1, 3.6, 4.1	• Recognises and comprehends a large range of signs, symbols, pictures, jargon, text, numbers and letters necessary to operate web browsers, operating systems, search engines and application packages, and to evaluate web page content
Writing	2.1, 2.2, 2.8, 2.10, 3.2, 3.3, 4.1, 4.4	• Enters text and data using keystrokes and adhering to the software program requirements • Structures and orders search queries using relevant search conventions, jargon, acronyms, symbols and wildcards to obtain optimum search results
Navigate the world of work	1.3, 2.3	• Takes some personal responsibility for adherence to legal and regulatory requirements
Get the work done	1.1-1.3, 2.1, 2.5-2.10, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 4.1-4.4, 5.1-5.5	• Plans routine tasks with familiar goals and outcomes, taking limited responsibility for decisions regarding sequencing • Understands purpose and specific functions of common digital tools used in work contexts • Takes responsibility for routine, low-impact decisions within familiar situations • Implements basic security requirements related to own tasks

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTICT108 Use digital literacy skills to access the internet	ICAICT108A Use digital literacy skills to access the Internet	Updated to meet Standards for Training Packages	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT108 Use digital literacy skills to access the internet

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- connect to and access the internet
- send and receive emails
- secure internet access and email communications
- use search tools to locate information or content
- research and select appropriate websites
- undertake online interactions
- make an informed assessment of the accuracy, currency, authority and reliability of the site and information located.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- list types and basic components of hardware and storage devices
- list different categories of domain names and explain how they indicate the integrity of the materials on the web site
- identify and explain common automated messages found when accessing the web
- outline types of online communication and participation, including transactional
- outline basic research techniques
- outline basic copyright legislation
- explain digital footprint and basic security, safety and legal issues
- list work health and safety (WHS) issues, including basic ergonomics of keyboard and computer use
- identify device interfaces

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- Identify desk top icons
- explain basic principles of web browser search engines
- outline internet protocols
- explain basic principles and features of web browsers and search engines.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general information and communications technology (ICT) industry, and include access to:

- hardware with internet access
- search engines currently used in industry.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT201 Use computer operating systems and hardware

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to select, configure and use computer operating systems and basic computer hardware, including configuring the operating system to work with a variety of hardware peripherals and types of information and communications technology (ICT) equipment.

It applies to individuals who may work under supervision and provide support to others using a range of skills to identify and resolve issues.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify operating system and hardware components	1.1 Determine ICT organisational requirements and specifications 1.2 Identify and select the operating system 1.3 Identify appropriate external hardware components 1.4 Identify internal hardware components
2. Install and configure	2.1 Install and configure the operating system to meet

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ELEMENT	PERFORMANCE CRITERIA
operating system and application software with hardware components	organisational requirements 2.2 Identify functions associated with the operating system and associated boot process 2.3 Configure power management settings to minimise power consumption, as an environmentally sustainable measure 2.4 Use both the graphical user interface and the command line interface to perform basic tasks 2.5 Install or upgrade application software onto the operating system and hardware configuration 2.6 Determine the relationship between an application program, the operating system and hardware 2.7 Identify general differences between different computer platforms and their respective operating systems
3. Optimise operating system and hardware components	3.1 Optimise operating system, using included tools or third-party utilities 3.2 Customise the graphical user interface 3.3 Use techniques unique to the command line interface 3.4 Set up and configure external hardware components and check functionality 3.5 Install drivers as appropriate and check functionality

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.4, 2.1-2.7, 3.1-3.5	• Identifies and reviews both on-line and hard-copy text containing simple sentences with terminology relevant to the ICT industry • Interprets and comprehends diagrams, icons, symbols, text, numbers and letters necessary to install and configure operating systems, software and hardware
Writing	2.1, 2.4, 2.5, 3.3	• Uses systems related syntax, text and numbers to input commands • Uses correct terminology, text, letters and numbers to

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		respond to computer generated prompts
Get the work done	1.1-1.4, 2.1-2.7, 3.1-3.5	• Plans routine tasks with familiar goals and outcomes, taking limited responsibility for decisions regarding sequencing and timing • Understands purposes, specific functions and key features of common digital systems and tools

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTICT201 Use computer operations systems and hardware	ICAICT201A Use computer operations systems and hardware	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT201 Use computer operating systems and hardware

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- use an operating system in a variety of scenarios and across functions, including:
  - scheduling, loading, initiating, and supervising the execution of programs
  - allocating storage
  - initiating and controlling input and output operations
  - handling errors
- identify and install suitable hardware components
- install and upgrade application software.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline the basic specifications of current industry accepted operating systems, hardware and applications software products
- explain the compatibility of an operating system, in respect to other versions
- explain the function of single-user and multi-user operating systems
- explain interoperability between operating systems
- outline work health and safety (WHS) principles and responsibilities, including ergonomic principles to avoid injury associated with using computer systems.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general information and communications technology (ICT) industry, and include access to:

- hardware components
- work health and safety (WHS) standards and organisational policy and procedures
- an operating system currently used in industry
- software configuration guides
- documents detailing operating system control panel and configuration data.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT202 Work and communicate effectively in an ICT environment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to work and communicate effectively within organisational policies and governance arrangements, using information and communications technology (ICT) systems, equipment and software.

It applies to individuals who may work under supervision with responsibility to support others within a small office environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to communicate and work effectively within an ICT organisation	1.1 Gather input from sources of information to develop, refine and document ICT roles and services in an organisation 1.2 Develop clear knowledge of enterprise policies, procedures and organisational requirements, including principles of equal employment opportunity (EEO) and anti-discrimination 1.3 Identify ICT policy and procedures, and determine whether

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ELEMENT	PERFORMANCE CRITERIA
	they are applied in practice 1.4 Determine key players within the organisation and their role and importance
2. Use positive and varied communication strategies with ICT clients	2.1 Receive requests and enquiries regarding use of ICT equipment, operating systems and software from clients and colleagues in a polite and appropriate manner 2.2 Respond appropriately to client and colleague requirements, and identify options 2.3 Present written information and ideas in clear and concise language to ensure the intended meaning is understood 2.4 Record information or messages and refer client requests to the appropriate person according to organisational procedures 2.5 Inform client of the progress of their request or enquiry and advise them of the organisational process for answering their request or enquiry 2.6 Escalate inquiries that cannot be satisfied immediately 2.7 Supply follow-up information to client as required in a timely manner 2.8 Accommodate cultural differences in the workplace

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 1.4, 2.1	• Reviews and evaluates a range of textual information to identify relevant information relating to the job role, enquiry and organisation
Writing	1.1, 1.3, 2.2-2.4	• Uses correct terminology, naming conventions and clear and detailed language to convey explicit information, requirements and recommendations • Records key information in a sequential manner, using correct spelling and grammar in a format appropriate to audience
Oral	1.1, 1.2, 1.4,	• Uses effective questioning and active listening techniques to elicit information about job roles and

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Communication	2.1-2.3, 2.5-2.8	clarify client queries • Contributes to an effective working environment by communicating with others in a timely and courteous manner and using clear, easy-to-understand and non-discriminatory language and behaviour
Navigate the world of work	1.2	• Takes some personal responsibility for adherence to legal and regulatory requirements
Interact with others	2.7, 2.8	• Seeks to cooperate with others to achieve results in immediate work context • Selects from small range of communication modes, forms and channels to meet a specific purpose within the immediate work context
Get the work done	1.1, 1.4	• Plans routine tasks with familiar goals and outcomes, taking some limited responsibility for decisions regarding sequencing • Understands the purpose and specific functions of common digital tools used in work contexts • Uses digital technology for basic reading, recording and searching information, and for communications following routine procedures and security requirements

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTICT202 Work and communicate effectively in an ICT environment	ICAICT202A Work and communicate effectively in an IT environment	Updated to meet Standards for Training Packages. Minor edits to clarify intent of performance criteria.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT202 Work and communicate effectively in an ICT environment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- gather information about the organisation and incorporate in communications
- process internal and external requests according to organisational policies and requirements
- respond promptly to client enquiries and requests from colleagues.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe current industry accepted hardware and software including:
  - features and capabilities
  - product directions
- outline the operational environment, including the:
  - customer base
  - company products
  - services
- outline the organisational policies and procedures that cover:
  - code of conduct
  - mission statement
  - routine work processes
  - systems, management structure and governance arrangements
- outline the principles of equal employment opportunity (EEO) and anti-discrimination

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- explain the role and positioning of information and communications technology (ICT) within the overall business objectives of the organisation.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general ICT industry, and include access to:

- a workstation
- a range of ICT equipment, operating systems, software and technical information
- organisational policies, procedures and governance documents.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT203 Operate application software packages

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to identify, select and operate three commercial software packages, including a word-processing and a spreadsheet application package.

It applies to individuals who utilise different software applications within a small to large office environment to produce diverse documents.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Use appropriate workplace health and safety (WHS) office work practices	1.1 Use safe work practices to ensure ergonomic, work organisation, energy and resource conservation requirements are addressed 1.2 Use wrist rests and document holders where appropriate 1.3 Use monitor anti-glare and radiation reduction screens where appropriate
2. Use appropriate	2.1 Select word-processing software appropriate to perform

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ELEMENT	PERFORMANCE CRITERIA
word-processing software	activity 2.2 Identify document purpose, audience and presentation requirements, and clarify with personnel as required 2.3 Identify organisational requirements for text-based business documents, and design document structure and layout to ensure consistency of style and image 2.4 Match document requirements with software functions to provide efficient production of documents 2.5 Use technical functions, other data and formatting to finalise documents 2.6 Ensure the naming and storing of documents in appropriate directories or folders and the printing of documents to the required specifications
3. Use appropriate spreadsheet software	3.1 Select spreadsheet software appropriate to perform activity 3.2 Identify document purpose, audience and presentation requirements, and clarify with personnel as required 3.3 Enter simple formulas and functions using cell referencing where required 3.4 Customise spreadsheet settings to meet requirements 3.5 Ensure the naming and storing of documents in appropriate directories or folders and the printing of documents to the required specifications
4. Use a third application software package	4.1 Select software application package appropriate to perform activity 4.2 Identify purpose, audience and presentation requirements, and clarify with personnel as required 4.3 Use technical functions, other data and formatting to finalise documents 4.4 Ensure documents are named and stored in appropriate directories or folders and printed to required specifications

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

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Skill	Performance Criteria	Description
Reading	2.2-2.5, 3.2-3.4, 4.2, 4.3	• Recognises and interprets textual information to determine organisational standards and job requirements • Interprets and comprehends symbols, icons and text associated with applications software
Writing	2.3-2.6, 3.3- 3.5, 4.3, 4.4	• Enters both written and verbally received information and data into a format suitable for the software application • Selects vocabulary, syntax, terminology, labelling and naming conventions suitable for the program
Oral Communication	2.2, 2.3, 3.2, 4.2	• Uses simple, relevant language, effective questioning, and active listening techniques to clarify work requirements
Numeracy	3.2-3.4	• Adds, subtracts, multiplies and divides whole numbers and decimals, identifying and selecting the correct formulas and functions to use • Applies the order of operations in calculations
Navigate the world of work	1.1	• Takes some personal responsibility for adherence to legal and regulatory requirements
Get the work done	1.2, 1.3, 2.1-2.6, 3.1-3.5, 4.1-4.4	• Follows routine procedures for using digital technology to enter, store and retrieve information directly relevant to role • Understands purposes, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine tasks, adapting some functions to improve personal efficiency • Plans routine tasks with familiar goals and outcomes, taking some limited responsibility for decisions regarding sequencing

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTICT203 Operate application software packages	ICAICT203A Operate application software packages	Updated to meet Standards for Training Packages	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT203 Operate application software packages

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- produce workplace documents using a minimum of three different software application packages
- open, amend and save files and documents according to organisational requirements
- apply workplace health and safety (WHS) principles and responsibilities for ergonomics, such as work periods and breaks
- use help manuals and online help.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify application software packages used by the organisation and list the purpose of each
- explain basic technical terminology related to reading help files and responding to system help prompts
- outline current business practices related to using software to prepare reports
- list features and functions of commercial computing packages
- describe import and export software functions
- describe the process of linking documents
- outline WHS principles and responsibilities for ergonomics, such as work periods and breaks
- explain the purpose of input and output devices.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general information and communications technology (ICT) industry, and include access to:

- a personal computer (PC) and printer
- software currently used in industry
- documents detailing organisational style guide and policy
- documents or information containing data suitable for developing software application documents.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT204 Operate a digital media technology package

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to identify, select and use a digital media package and supporting technologies to produce a variety of media rich documents.

It applies to individuals who may work under supervision within a small to large office environment and have responsibility for completion of designated tasks, using a range of practical skills and basic technical knowledge.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Use appropriate workplace health and safety (WHS) office work practices	1.1 Use safe work practices to ensure ergonomic, work organisation, energy and resource conservation requirements are addressed 1.2 Use wrist rests and document holders where appropriate 1.3 Use monitor anti-glare and radiation reduction screens where appropriate
2. Identify and select	2.1 Identify the basic requirements of a design brief, including

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ELEMENT	PERFORMANCE CRITERIA
appropriate digital media package	user environment 2.2 Research and review suitable available digital media packages 2.3 Select an appropriate digital media package to meet design brief requirements
3. Use digital media package	3.1 Procure or create suitable data to meet requirements of the brief 3.2 Manipulate data using digital media package tools 3.3 Ensure naming and storing of documents in appropriate file format in directories or folders
4. Review digital media design	4.1 Evaluate design for creative, dramatic and technical quality, file size, and suitability to meet the brief 4.2 Test and run any incorporated graphics, video or sound as part of a digital media presentation and present designs in the appropriate format 4.3 Review final product against design brief

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	2.1, 2.2, 3.1, 3.3, 4.3	• Recognises and interprets textual and diagrammatic information to select appropriate digital media packages • Interprets systems related icons, text and diagrams
Writing	3.1-3.3	• Enters written and verbally received information and data into a format suitable for the digital media package • Selects vocabulary, syntax, terminology, labelling and naming conventions to meet program and design requirements
Numeracy	3.1, 3.2	• Adds and subtracts whole numbers, fractions and decimals to calculate time, audio output, graphic dimensions and file size
Navigate the world of	1.1	• Takes some personal responsibility for adherence to legal and regulatory requirements

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work		
Get the work done	1.1-1.3, 2.1- 2.3, 3.1-3.3, 4.2	• Follows routine procedures for using digital technology to enter, store and retrieve information directly relevant to role • Understands purposes, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine tasks, adapting some functions to improve personal efficiency • Plans routine tasks with familiar goals and outcomes, taking some limited responsibility for decisions regarding sequencing

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTICT204 Operate a digital media technology package	ICAICT204A Operate a digital media technology package	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT204 Operate a digital media technology package

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- interpret basic requirements of a design brief
- use digital media package to meet organisational requirements
- apply workplace health and safety (WHS) principles and responsibilities for ergonomics, such as work periods and breaks
- use help manuals and online help when appropriate
- use digital media technologies to support design brief requirements.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain the basic principles of visual design
- outline the functions and features of digital media packages and technologies
- identify graphic design and stylistic language conventions
- outline WHS principles and responsibilities for ergonomics, such as work periods and breaks
- outline the principles of digital imaging and file formats, video and sound file formats, file management and transfer systems
- identify vendor product directions in digital media hardware and software
- explain how to visualise and interpret creative information, scripts (text) and images.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general information and communications technology (ICT) industry, and include access to:

- a personal computer (PC) and printer
- software currently used in industry
- documents detailing organisational style guide and policy
- documents or information containing data suitable for developing software application documents.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT205 Design basic organisational documents using computing packages

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to design, create and produce basic organisational documents using application software within organisational guidelines, procedures and policies.

It applies to individuals who need to use foundation information and communications technology (ICT) skills in a wide range of varying industry occupations.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Design documents to meet organisational needs	1.1 Determine basic design guidelines and requirements 1.2 Select appropriate application software 1.3 Use application software to design and configure document templates for use in a business environment
2. Use application software to develop	2.1 Use application software as per specifications to develop documents

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ELEMENT	PERFORMANCE CRITERIA
documents	2.2 Access, retrieve, manipulate and save document files 2.3 Amend designs according to organisational requirements 2.4 Store documents for wider access and editing as required
3. Evaluate and incorporate feedback	3.1 Obtain document sign-off from appropriate person 3.2 Incorporate feedback and update document

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 2.1, 3.2	• Recognises and interprets text to determine organisational guidelines and requirements, and application software specifications
Writing	1.3, 2.1, 3.2	• Uses appropriate and clear language and organisational protocols for labels and filenames when designing templates and developing documents
Oral Communication	1.1, 3.1	• Uses simple, relevant language, effective questioning, and active listening techniques to clarify work requirements and obtain feedback
Numeracy	1.3, 2.1, 2.3	• Takes measurements and performs calculations for document layout
Get the work done	1.2, 1.3, 2.1-2.4, 3.2	• Follows routine procedures for using digital technology to enter, store and retrieve information directly relevant to role • Understands purposes, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine tasks, adapting some functions to improve personal efficiency • Plans routine tasks with familiar goals and outcomes, taking some limited responsibility for decisions regarding sequencing • Uses the main features and functions of digital tools to complete work tasks and access information

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTICT205 Design basic organisational documents using computing packages	ICAICT205A Design basic organisational documents using computing packages	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT205 Design basic organisational documents using computing packages

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- produce a workplace document using a range of features
- develop several workplace documents with minimal instruction on their design from end user or supervisor.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify features of application packages
- explain current business practices related to preparing organisational documents
- recognise industry standard input and output devices
- identify organisational documentation and style guides
- identify organisational storage and retrieval procedures.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general information and communications technology (ICT) industry, and include access to:

- organisational requirements and a template for the documents
- a personal computer (PC), scanner and laser printer
- word-processing facilities
- presentation software applications.

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Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT206 Install software applications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to select, install or upgrade basic commercial software applications.

It applies to individuals who require basic information and communications technology (ICT) skills to undertake related tasks under supervision.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine software or software upgrade requirements	1.1 Document client requirements and report to appropriate person 1.2 Act on instructions to meet client requirements, according to organisational requirements
2. Obtain software or software upgrade	2.1 Investigate and select a software application program that best conforms to requirements and organisational policies 2.2 Obtain application program under instruction from appropriate person

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ELEMENT	PERFORMANCE CRITERIA
	2.3 Determine licensing requirements and record, according to organisational guidelines 2.4 Ensure target computer conforms to the minimum hardware and operating system requirements of the application program
3. Install or upgrade software	3.1 Install new or upgraded software application program according to appropriate person or organisational instructions 3.2 Complete the installation process efficiently and effectively to minimise disruption 3.3 Carry out testing and acceptance, according to organisational guidelines, paying particular attention to possible effect on other systems 3.4 Ensure client requirements are satisfied 3.5 Refer outstanding client issues to appropriate person as necessary

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	2.1, 2.3	• Uses available literature to appropriately address requirements • Interprets and responds to complex text to ascertain and confirm requirements
Writing	1.1, 2.3	• Records key information relevant to requirements, using basic punctuation, text and correct spelling
Oral Communication	1.1, 2.2, 3.1, 3.4, 3.5	• Uses listening and questioning techniques to confirm understanding of requirements • Uses clear and specific language to convey requirements
Navigate the world of work	2.1	• Takes some personal responsibility for adherence to organisational requirements
Get the work done	1.2, 2.1, 2.2, 2.4, 3.1-3.3	• Follows routine procedures for using digital technology to enter, store and retrieve information directly relevant to role • Understands purposes, specific functions and key

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		features of common digital systems and tools, and operates them effectively to complete routine tasks • Plans routine tasks with familiar goals and outcomes, taking some limited responsibility for decisions regarding sequencing

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTICT206 Install software applications	ICAICT206A Install software applications	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT206 Install software applications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- install software applications through operating system instructions
- configure computer to accept new software or upgrade
- carry out testing and acceptance according to organisational guidelines.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe a typical client business domain
- identify typical hardware storage devices
- identify typical input and output devices
- describe key licensing arrangements and responsibilities to ensure they are adhered to
- identify operating systems supported by the organisation
- describe the organisational guidelines for purchasing
- identify the installation requirements for key software application packages
- describe typical software copyright responsibilities.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general information and communications technology (ICT) industry, and include access to:

- a personal computer (PC) where software installation may be performed

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- application software currently used in industry
- documents detailing organisational testing and acceptance policy and procedures.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT207 Integrate commercial computing packages

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to manipulate, convert and integrate data between two or more different commercial software applications.

It applies to individuals who require foundation skills and knowledge to use information and communications technology (ICT) in any ICT business or office environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine work requirements	1.1 Identify the task requirement 1.2 Select appropriate software and file formats to perform required work 1.3 Obtain organisational documentation, such as procedures, manuals and guides, and use when appropriate
2. Integrate data across different software application packages	2.1 Create a mailing list using a database, spreadsheet or address book, and merge mailing list with another document 2.2 Use software application package conversion tool to convert

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ELEMENT	PERFORMANCE CRITERIA
	data from one format to another to enable additional work on the converted data 2.3 Save data to a new file format 2.4 Import objects from another software application package and modify as required to produce a required outcome 2.5 Export data to another software application package to produce a required outcome 2.6 Create a link between one software application package and another, and use this to update information to a document
3. Save and retrieve data with the aid of help functions	3.1 Save data to disk 3.2 Convert data to a new file format 3.3 Re-access data and check information 3.4 Access user help documentation or other resources for basic difficulties with software application package

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.3, 3.4	• Recognises and interprets text with ICT specific terminology to determine task requirements, organisational guidelines and use application software
Oral Communication	1.1, 3.4	• Uses effective listening and questioning techniques to elicit information about task requirements to resolve basic difficulties
Navigate the world of work	1.3	• Generally follows the explicit protocols immediately related to role
Get the work done	1.1, 1.2, 2.1- 2.3, 2.5, 2.6, 3.1-3.3, 3.4	• With assistance, determines priorities and sequences the steps involved in clearly defined, familiar tasks, and identifies and assembles the resources required • Recognises and responds to predictable routine problems related to role in the immediate work

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		context • Understands the purpose and specific functions of common digital tools used in work contexts • Follows routine procedures for using digital technology to enter, store and retrieve information directly relevant to role

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTICT207 Integrate commercial computing packages	ICAICT207A Integrate commercial computing packages	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT207 Integrate commercial computing packages

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- select appropriate software and file formats
- create mailing list and merge with another document
- manipulate and integrate data between commercial application software following organisational procedures.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline current business practices related to preparing reports
- identify features and functions of commercial computing packages
- identify import and export software functions
- outline processes for linking documents
- outline workplace health and safety (WHS) principles and responsibilities for ergonomics
- identify software packages used by the organisation
- outline strategies for integrating commercial computing packages
- outline the use of input and output devices.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general information and communications technology (ICT) industry, and include access to:

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- a personal computer (PC) and printer
- software currently used in industry
- documents detailing organisational style guide and policy
- documents or information containing data suitable for use with multiple computing packages.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT208 Operate accounting applications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to operate common accounting software packages in order to maintain enterprise financial records.

It applies to individuals working with little supervision who use information and communications technology (ICT) skills and knowledge to support the financial area within a small to large office environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Customise software	1.1 Select accounting software to meet business requirements 1.2 Load, register and configure accounting software according to operating instructions
2. Create enterprise data	2.1 Establish chart of accounts according to business and legislative requirements 2.2 Create and add data on customers and sales

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ELEMENT	PERFORMANCE CRITERIA
	2.3 Create and add data on suppliers and purchases 2.4 Create and add payroll details 2.5 Create and add inventory details 2.6 Add required or suitable tax codes
3. Record and track transactions	3.1 Generate invoices and track their progress 3.2 Record customer payments and update customer details 3.3 Record and track purchases 3.4 Record payment of wages, allowances, taxation and superannuation 3.5 Update business data as required
4. Save and back up data	4.1 Save accounting data to disk 4.2 Make a regular backup of accounting data and store in a safe location
5. Generate reports	5.1 Reconcile accounts 5.2 Generate and print financial reports based on accounting data 5.3 Check financial reports for errors and discrepancies 5.4 Discuss errors with appropriate person and rectify as required

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 2.1, 5.3, 5.4	• Identifies and interprets textual and numerical financial information necessary to maintain organisational accounting records • Interprets textual information from relevant sources to identify the most appropriate software to use, and business and legislative requirements
Oral	1.1, 1.2, 2.1, 5.4	• Uses plain English, effective listening and questioning techniques and, where necessary,

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Communication		finance specific terminology to elicit information and discuss issues
Numeracy	2.1-2.6, 3.1-3.5, 5.1-5.4	• Interprets numerical information containing whole numbers, decimals and percentages, and applies a range of mathematical calculations to ensure organisational financial requirements are met
Navigate the world of work	2.1	• Appreciates the implications of legal and regulatory responsibilities related to own work
Get the work done	1.1, 1.2, 2.2- 2.6, 3.1-3.5, 4.1, 4.2, 5.1, 5.4	• Plans a range of routine and some non-routine tasks, accepting stated goals and aiming to achieve them efficiently • Understands the purpose, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine tasks • Uses familiar digital systems and tools to access, organise, analyse and display information relevant to role

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTICT208 Operate accounting applications	ICAICT208A Operate accounting applications	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT208 Operate accounting applications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- load and configure accounting software
- create and maintain enterprise financial records as per business and legislative requirements
- record and track transactions
- back up data
- reconcile accounts and generate reports.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- discuss basic accounting concepts, including:
  - assets
  - cost of sales
  - creditors
  - debtors
  - equity
  - expenses
  - income
  - liabilities
- identify basic accounting devices, including:
  - accounts
  - chequebook register

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  - general ledger
  - invoices
  - purchases
  - sales journals
  - transaction journals
- outline current legislative requirements relating to enterprise requirements, including:
  - goods and services tax
  - income tax rates
  - pay as you go
  - superannuation
- discuss the features and functions of common accounting reports, including:
  - balance sheet
  - business activity statements
  - chart of accounts
  - profit and loss
- outline the features and functions of common accounting software.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general information and communications technology (ICT) industry, and include access to:

- a printer and personal computer (PC) with appropriate specifications to run the software
- industry standard commercial accounting applications
- documents detailing business requirements
- legislative requirements if required.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT209 Interact with ICT clients

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to provide routine information and communications technology (ICT) support to clients in a professional manner.

It applies to individuals who, while working under a level of supervision, have responsibility in a frontline technical support capacity to exercise discretion and judgement using appropriate knowledge to provide assistance.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Deliver support to ICT clients	1.1 Provide support for ICT clients in a courteous and professional manner according to organisational policy 1.2 Establish and confirm nature of client's ICT concerns using active listening and questioning 1.3 Maintain client contact and provide progress information until the problem is resolved
2. Respond to ICT client	2.1 Respond to ICT client's concerns and issues, demonstrating

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ELEMENT	PERFORMANCE CRITERIA
complaints	a positive, sensitive and helpful attitude 2.2 Escalate and refer client concerns to support person if required, explaining the nature of issues involved 2.3 Resolve ICT client complaint using recommendations from the support person 2.4 Document and record ICT client concerns and solutions, according to organisational guidelines
3. Evaluate received ICT client complaints	3.1 Analyse recent ICT register 3.2 Propose proactive training to appropriate person

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	3.1	• Evaluates textual information containing ICT specific terminology to establish proactive training needs
Writing	2.4	• Completes documentation necessary for work tasks and reporting requirements by using clear, concise and accurate grammar and language, and relevant ICT terminology
Oral Communication	1.1-1.3,2.1-2.3, 3.2	• Uses effective questioning and active listening techniques to elicit information and clarify client queries, concerns and complaints • Contributes to an effective working environment by communicating in a courteous manner and using clear, easy-to-understand and non-discriminatory language and behaviour
Navigate the world of work	1.1	• Generally follows the explicit protocols immediately related to own role
Get the work done	1.3, 2.3, 3.1	• Recognises and responds to predictable routine problems related to role in the immediate work context • Uses the main features and functions of common digital tools in everyday work contexts

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalent status
ICTICT209 Interact with ICT clients	ICAICT209A Interact with ICT clients	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT209 Interact with ICT clients

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- provide routine information and communications technology (ICT) client support in a professional manner
- refer client concerns to support person if required, according to escalation procedures
- resolve client complaints
- document and record client concerns and solutions according to organisational guidelines.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- list current industry accepted hardware and software products, and describe their general features and capabilities
- describe the ICT client business domain and business critical functions
- discuss the organisational systems and working environment
- outline organisational policies for external and internal client contact.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general ICT industry, and include access to:

- a personal computer
- relevant organisational guidelines
- relevant documentation

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- a site where routine ICT client support may be demonstrated.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT210 Operate database applications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to operate database applications and create and develop simple relational databases using pre-existing data.

It applies to individuals who provide administrative support working under direct supervision or with limited responsibility within a wide range of industry occupations.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Create database	1.1 Open a database application and design a two-table, simple relational database incorporating basic design principles 1.2 Develop a table with fields and attributes according to database usage, as well as user requirements 1.3 Create a primary key and establish an index for each table 1.4 Modify table layout and field attributes as required 1.5 Create a relationship between the two tables 1.6 Add and modify data in a table according to information

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ELEMENT	PERFORMANCE CRITERIA
	requirements 1.7 Add and delete records as required 1.8 Save and close down database to storage area
2. Customise basic settings	2.1 Adjust page layout to meet user requirements 2.2 Open and view different toolbars 2.3 Format font as appropriate for the purpose of the database entries
3. Create reports	3.1 Design reports to present data in a logical sequence 3.2 Modify reports to include or exclude additional requirements 3.3 Distribute reports to appropriate person in a suitable format
4. Create forms	4.1 Use a wizard to create a simple form 4.2 Open existing database and modify records through a simple form 4.3 Rearrange objects within the form to accommodate information requirements
5. Retrieve information	5.1 Access existing database and locate required records 5.2 Create simple query and retrieve required information 5.3 Develop query with multiple criteria and retrieve required information 5.4 Select data and display appropriately

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 5.1	• Identifies and analyses a wide range of hard copy and on-line forms, reports and other end-user documentation to identify end-user needs and data
Writing	1.2, 3.1, 3.2, 4.1, 4.3, 5.2, 5.3	• Uses database related terminology and protocols when designing tables, queries, reports and forms

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		• Uses clear plain English appropriate for end-users when labelling fields within reports and forms
Oral Communication	1.2, 3.3	• Uses simple, relevant language, effective questioning, and active listening techniques to clarify user requirements, confirm understanding and when liaising with the appropriate person
Numeracy	5.3	• Identifies and comprehends the specific numeric data needed, and uses logical functions, mathematical symbols and applies the order of operations in calculations when developing queries
Interact with others	3.3	• Selects the appropriate form, channel and mode of communication for a specific purpose relevant to own role
Get the work done	1.1-1.8, 2.1-2.3, 3.1,3.2, 4.1-4.3, 5.1-5.4	• Plans a range of routine tasks and aims to achieve them efficiently • Takes responsibility for routine, low-impact decisions within familiar situations • Begins to identify and implement standard solutions for a number of routine problems • Understands the purpose and specific functions of common digital tools used in work contexts • Follows routine procedures for using digital technology to enter, store and retrieve information directly relevant to role

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTICT210 Operate database applications	ICAICT210A Operate database applications	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT210 Operate database applications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- design and develop a simple database using a standard database package
- add data
- create and use a query with multiple criteria
- create and modify reports and forms.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline basic database design principles
- discuss the purposes of forms, reports and queries for retrieving and displaying information
- outline the reasons for relationships between tables (cardinality)
- describe the purpose, use and function of database software.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general information and communications technology (ICT) industry and include access to:

- a PC and printer
- database software currently used in industry
- documents detailing organisational style guide and policy

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- documents or information containing data suitable for creating a database.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT211 Identify and use basic current industry specific technologies

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to engage in basic ongoing review and research of industry specific technologies in order to identify and apply these technologies or techniques to improve aspects of an organisation's activities.

It applies to individuals who work under minimal supervision and are responsible for ensuring that the quality of the business process is maintained at the highest level possible, through the appropriate application of industry specific technologies.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to use basic industry specific technologies	1.1 Identify technologies specific to an industry sector 1.2 Acquire and use the industry specific technologies 1.3 Identify, classify and use industry specific technologies for the benefit of the organisation
2. Use basic industry	2.1 Conduct testing of industry specific technologies

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ELEMENT	PERFORMANCE CRITERIA
specific technologies to assist in solving organisational problems	2.2 Use features and functions of industry specific technologies within an organisational context 2.3 Demonstrate depth of knowledge of enabling technologies to an accepted industry standard 2.4 Access and use sources of information relating to the industry specific technologies
3. Evaluate performance of basic industry specific technology	3.1 Evaluate industry specific technologies for performance, usability and benefit to the organisation 3.2 Determine environmental considerations involved when using the technology 3.3 Seek feedback from users where appropriate

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Learning	1.1-1.3, 2.3, 2.4	• Investigates, evaluates and applies information from a range of complex and technical texts to expand own knowledge and identify industry specific technologies that will benefit the organisation
Reading	1.1, 1.3, 2.1, 2.4, 3.2, 3.3	• Identifies and interprets technical online and hard copy documentation containing complex terminology and diagrams to identify industry specific technologies that will benefit the organisation, and to determine environmental considerations
Oral Communication	1.1-1.3, 2.4, 3.1-3.3	• Elicits information and feedback by using effective listening and questioning techniques to identify and evaluate industry specific technologies • Uses clear, easy-to-understand language, and translates industry specific terminology into plain English where necessary
Navigate the world of work	2.3, 3.2	• Recognises organisational expectations and follows explicit protocols and procedures
Get the work done	1.1-.3, 2.1-2.4, 3.1	• Determines priorities and sequences the steps involved in clearly defined familiar tasks, and

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		identifies and assembles the resources required • Demonstrates the purposes, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine tasks

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTICT211 Identify and use basic current industry specific technologies	ICAICT211A Identify and use basic current industry specific technologies	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT211 Identify and use basic current industry specific technologies

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- identify basic new and emerging industry specific technologies and techniques
- use basic features and functions of identified industry specific technologies to an industry standard.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline current technology trends and directions in information and communications technology (ICT), and specifically of the major industry technology standards used in the specified area
- outline vendor product directions
- describe current industry hardware and software products, with broad knowledge of general features and capabilities, and their application
- outline information gathering techniques.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general ICT industry, and include access to:

- a site where industry specific technologies may be used
- industry specific technologies currently used in industry
- documents detailing work health and safety (WHS) standards, environmental guidelines and organisational requirements.

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Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT212 Incorporate Indigenous needs and perspectives into ICT environment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to identify and use current information and communications technology (ICT) within Indigenous communities and to research and discuss alternative ICT solutions that meet the specific needs of Indigenous learners.

It applies to individuals who work with Indigenous people and communities under a level of supervision and use a range of specialised technical knowledge and knowledge of Indigenous learning styles and systems to provide advice.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: delivery and assessment against this unit of competency must comply with Indigenous community protocols and guidelines, and be supported by Elders or custodians of Country.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify the use of ICT systems in the Indigenous	1.1 Identify local community organisations, including Indigenous community organisations and other relevant

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ELEMENT	PERFORMANCE CRITERIA
community	Indigenous and related agencies, that use ICT 1.2 Determine specific Indigenous learning styles, knowledge systems and relevant legislation that impact on the use of ICT in an Indigenous community 1.3 Identify the most common communication technologies, software applications and hardware solutions used in the local community 1.4 Identify the use of ICT in local community organisations, including Indigenous community organisations and other relevant bodies
2. Identify and use specific ICT resources relevant to Indigenous people	2.1 Identify a range of methods of accessing Indigenous and non-Indigenous electronic resources for research and learning 2.2 Identify and access relevant Indigenous and ICT websites and other online resources 2.3 Following community consultation, discuss and compare the relevance of a range of Indigenous websites to Indigenous communities
3. Identify appropriate ICT resources to meet the needs of Indigenous people and communities	3.1 Use the most common local communication technologies, software applications and hardware solutions 3.2 Research and identify possible alternative communication technologies, software applications and hardware solutions 3.3 Discuss most appropriate ICT resources with local Indigenous community, to meet Indigenous individual and community needs

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 2.1, 2.2, 3.2	• Recognises and interprets both hard copy and on-line texts from both Indigenous and non-Indigenous sources to obtain information about the use of ICT in Indigenous communities
Oral	1.1-1.4, 2.1-2.3,	• Uses effective questioning and active listening techniques to elicit information

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Communication	3.2, 3.3	• Uses specific language and applies appropriate communication skills to ensure satisfactory interactions with Indigenous community members • Participates in a verbal exchange of ideas/solutions and uses detailed and clear language to clarify and present information
Get the work done	1.3, 2.1, 2.2, 3.1	• Begins to identify and assemble resources required to undertake the role • Understands the purposes, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine tasks

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalent status**
ICTICT212A Incorporate Indigenous needs and perspectives into ICT environment	ICAICT212A Incorporate Indigenous needs and perspectives into IT environment	Updated to meet Standards for Training Packages. Minor edits to title and clarify intent of performance criteria.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT212 Incorporate Indigenous needs and perspectives into ICT environment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- identify common communication technologies, software applications and hardware solutions used in the local Indigenous community
- identify specific Indigenous customs and practices that impact on the use of information and communications technology (ICT) within the community
- use current communication technologies, software applications and hardware solutions
- consult with relevant Indigenous community members and develop alternative ICT solutions.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- provide a summary of operating system, hardware and software products
- discuss ergonomic principles to avoid back, wrist and eye strain
- discuss work health and safety (WHS) principles and responsibilities relating to ICT specific to Indigenous community customs and practices
- identify important indigenous cultural communications attributes.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general ICT industry, and include access to:

- a PC
- relevant hardware components

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- WHS standards and organisational policies and procedures
- relevant software applications
- common communication technologies.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT302 Install and optimise operating system software

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit defines the skills and knowledge required to install, configure and optimise operating system (OS) software to meet business and client needs.

It applies to individuals who may work under supervision and support others using well developed skills in creating solutions through analysis and evaluation of information.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine function of operating system	1.1 Identify and demonstrate understanding of the purposes of operating system 1.2 Distinguish between batch system, real-time system and multi-tasking system 1.3 Compare and contrast different operating systems and their features 1.4 Identify and demonstrate knowledge of the basic functions of operating system, including file system, memory

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ELEMENT	PERFORMANCE CRITERIA
	management, process scheduling 1.5 Identify and demonstrate management of virtual memory
2. Obtain operating system	2.1 Contact operating system vendors to obtain technical specifications and system requirements 2.2 Identify process and steps required to install and configure the operating system using installation components 2.3 Document adjustment recommendations and provide to appropriate person 2.4 Determine and apply knowledge of licensing, hardware and security requirements
3. Install, configure and optimise operating system	3.1 Install, configure and test operating system using installation components and boot-utility options 3.2 Use the relevant operating system user interface to correctly configure the installation 3.3 Optimise the system to meet organisational requirements 3.4 Document the system according to organisational requirements 3.5 Install the operating system with minimal disruption to client or users
4. Provide instruction to meet new software requirements	4.1 Provide one-to-one instruction about changes to the client or users as required 4.2 Obtain client evaluation about new system to ensure requirements are met, using appropriate feedback mechanism

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.3-1.5, 2.1, 2.2, 2.4, 3.1, 3.2, 4.2	• Identifies, analyses and evaluates a range of on-line and hard-copy text containing complex, OS specific terminology, and applies the information to the selection, installation, configuration and optimisation of operating systems

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		• Interprets and comprehends a large range of syntax, diagrams, icons, symbols, text, numbers and letters necessary to install and configure operating systems
Writing	2.3, 3.4	• Uses the correct spelling and grammar, clear plain English and systems related text to document recommendations and processes, and develop feedback tools
Oral Communication	2.1, 3.5, 4.1, 4.2	• Elicits and evaluates information using OS related terminology and effective listening and questioning techniques • Uses simple and relevant language to liaise with clients, present information and obtain feedback
Navigate the world of work	2.4	• Takes some personal responsibility for adherence to legal and regulatory requirements, and seeks clarification when required
Get the work done	1.1-1.5, 2.1, 2.2, 3.1-3.3, 3.5	• Takes responsibility for planning and organising own workload, identifying ways of sequencing and combining elements for greater efficiency and considering how to link with the work of others • Understands the purposes, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine tasks

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTICT302 Install and optimise operating system software	ICAICT302 Install and optimise operating system software	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT302 Install and optimise operating system software

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- install, configure and test an operating system to improve system performance with minimum disruption to clients.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- compare current industry accepted hardware and software products
- outline functions and features of operating systems used by the organisation
- explain the installation and configuration of systems software
- explain the architecture of current technical systems
- outline the deployment of current organisational systems
- list organisational requirements for operating system (OS) software
- explain prerequisites for system software installation
- outline set-up and configuration procedures
- list software packages supported by the organisation
- describe system’s current functionality
- list system’s diagnostic software
- outline vendor specifications and requirements for installation.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general information and communications technology (ICT) industry, and include access to:

- a personal computer where installation may be performed
- OS software and technical documentation
- organisational documentation.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT303 Connect internal hardware components

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to acquire, install, configure and evaluate system hardware components according to client and user requirements.

It applies to individuals who work with a degree of self-sufficiency and provide support in a range of information and communications technology (ICT) work areas and activities.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify, categorise and distinguish between the different types of internal hardware components	1.1 Identify and categorise the different internal hardware components 1.2 Define the purpose and characteristics of the different internal hardware component categories 1.3 Distinguish between different types of devices within each internal hardware component category
2. Determine components required	2.1 Identify and clarify user internal hardware component requirements according to organisational guidelines

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Organise and record user component requirements, pass on to appropriate person for evaluation and vendor selection
3. Obtain components	3.1 Contact vendors to obtain technical specifications for the proposed components 3.2 Assess options and provide recommendations to the appropriate person for final analysis 3.3 Obtain components to prepare for installation
4. Install components	4.1 Develop plans, with prioritised tasks and contingency arrangements, for the installation of selected components with minimum disruption to clients 4.2 Liaise with appropriate person to obtain approval for the plans 4.3 Install and configure components according to plan, installation procedures and organisational requirements 4.4 Test components for error-free performance, using available technology 4.5 Identify and resolve identified problems 4.6 Test and enhance system performance, using knowledge of the system, to meet organisational benchmarks 4.7 Document the installation and configuration process according to organisation guidelines
5. Evaluate modified system	5.1 Collect client or user feedback and analyse against client requirements 5.2 Correct identified shortcomings in the system and record actions

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	2.1, 3.2, 4.3, 5.1	• Identifies, interprets and evaluates online and hard copy documentation containing complex ICT related terminology, acronyms and concepts

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Writing	2.2, 3.2, 4.1, 4.7	• Uses correct spelling, grammar and plain English together with the ICT specific terminology and diagrams to convey recommendations and requirements, and complete organisational documentation
Oral Communication	1.1, 2.2, 3.1-3.3, 4.1, 4.2, 5.1	• Converts highly technical language and terminology into plain English to communicate ideas and plans, and gather feedback from clients • Uses effective listening and questioning techniques and technical terminology to elicit information and make the correct component selection
Navigate the world of work	2.1, 4.3	• Recognises and follows explicit protocols and meets expectations associated with own role
Get the work done	1.1, 1.3, 2.1, 2.2, 3.2, 3.3, 4.1, 4.4-4.6, 5.1, 5.2	• Initiates standard procedures when responding to familiar problems within immediate context • Recognises some general design and operating principles of digital tools and uses these to help when modifying systems and when troubleshooting • Takes responsibility for planning and organising own workload, identifying ways of sequencing and combining elements for greater efficiency

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTICT303 Connect internal hardware components	ICAICT303A Connect internal hardware components	Updated to meet Standards for Training Packages. Minor edits to clarify intent of performance criteria.	Equivalent unit

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Links

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Assessment Requirements for ICTICT303 Connect internal hardware components

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- identify and categorise the different types of internal hardware components
- modify system's hardware to meet client requirements
- plan modification of and connect internal hardware components according to vendor and technical specifications
- install components across a variety of situations and account for unexpected contingencies
- evaluate the system on completion.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe areas of the operating system relevant to configuration and testing
- compare current industry accepted hardware and software products
- outline environmental considerations in e-waste disposal
- outline organisational guidelines and organisational requirements with regard to safety, recycling and component installation
- outline system's diagnostic software and current functionality
- interpret vendor specifications and requirements for component installation.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general information and communications technology (ICT) industry, and include access to:

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- a personal computer and internal hardware components for installation
- current industry standard performance testing software
- documents detailing organisational guidelines and requirements
- technical manuals and tools.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT304 Implement system software changes

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to implement system software changes and to hand over the modified system to the client's operational area.

It applies to individuals working in support roles who are required to update operating systems on client computers with the latest technology fixes, working under minimum supervision.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine system changes required	1.1 Determine and record required changes to system 1.2 Ensure documentary evidence exists to support changes and evaluate changes required 1.3 Complete documentation required according to maintenance methodologies 1.4 Clarify and confirm nature of the changes with the client 1.5 Obtain technical data from reliable sources and request

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ELEMENT	PERFORMANCE CRITERIA
	other resources that may be required to complete the changes
2. Carry out system changes	2.1 Plan the procedure to effect intended changes 2.2 Consult with colleagues and users involved in the proposed changes and agree a mutually acceptable timeline and method of implementation 2.3 Copy initialisation or configuration files prior to implementation 2.4 Create a roll-back path in the event of failure 2.5 Ensure changes required in software are made according to project or organisational guidelines 2.6 Test and verify that the changes have been made according to implementation guides and organisational standards
3. Present changes to client	3.1 Demonstrate changes to the client and explain the impact of these changes 3.2 Work towards making these changes acceptable to the client if changes are rejected, or making further modifications if required 3.3 Update documentation and repositories according to standards and update modifications made to the change management system
4. Perform handover to client	4.1 Update documentation and client procedures to reflect changes made 4.2 Secure sign-off of acceptance documents by client 4.3 Facilitate handover of modified system to client's operational area

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 1.5	• Identifies and interprets hard copy, online and computer generated text, numerical and diagrammatic information with systems

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		software specific terminology • Reviews a range of organisational documentation to identify relevant information relating to the requirements of both the job role and organisation
Writing	1.1, 1.3, 3.3, 4.1	• Uses correct spelling and grammar, plain English and, when necessary, systems related text and terminology to complete documentation and update client procedures
Oral Communication	1.1, 1.2, 1.4, 1.5, 2.1, 2.2, 3.1, 3.2, 4.2, 4.3	• Uses effective listening and questioning techniques and systems related terminology to elicit information about the systems and determine the job requirements • Converts highly technical language and terminology to plain English to communicate changes to, and gather feedback from, the client(s)
Navigate the world of work	2.5, 2.6, 3.3	• Recognises and follows explicit protocols and meets expectations associated with own role
Get the work done	1.1, 2.1-2.4, 2.6, 3.2, 3.3, 4.3	• Initiates standard procedures when responding to familiar problems within immediate context • Recognises some general design and operating principles of digital tools and uses these to help when modifying systems and when troubleshooting • Takes responsibility for planning and organising own workload, identifying ways of sequencing and combining elements for greater efficiency

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTICT304 Implement system software changes	ICAICT304A Implement system software changes	Updated to meet Standards for Training Packages	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT304 Implement system software changes

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- evaluate, document and implement changes to the system with minimum disruption to the system and client users
- hand over the project to the client with instructions and updated documentation.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify and describe business scheduling requirements
- identify change control procedures
- describe client business domain
- discuss current industry accepted hardware and software products
- discuss emerging standards for data and voice communications
- outline the system's current functionality
- discuss the features of the system under modification
- outline the organisational policy and procedures with regard to system changes
- recognise vendor software services with regard to system changes.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general information and communications technology (ICT) industry, and include access to:

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- a computer
- system software currently used in industry
- technical manuals and tools.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT306 Migrate to new technology

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to research, acquire, evaluate and apply new technology to improve the organisation’s performance.

This unit applies to individuals who have achieved a degree of autonomy as information and communications technology (ICT) users and support staff engaged in ongoing review and research to identify and apply new technology or techniques to improve aspects of the organisation's activities.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to use new technology	1.1 Review organisation’s goals and activities 1.2 Research new operational technologies that will advance the organisation’s goals and activities 1.3 Prepare evaluation checklist 1.4 Evaluate and select the most appropriate technologies 1.5 Acquire selected technology

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ELEMENT	PERFORMANCE CRITERIA
	1.6 Identify and use new or upgraded equipment where appropriate for the benefit of the organisation
2. Use technology to assist in solving organisational problems	2.1 Conduct testing of new or upgraded equipment 2.2 Use features and functions of new or upgraded equipment and software within the organisation 2.3 Access and use sources of information relating to new or upgraded equipment
3. Evaluate new or upgraded technology performance	3.1 Evaluate new or upgraded equipment for performance and usability against work health and safety (WHS) standards and evaluation criteria 3.2 Determine environmental considerations for new or upgraded equipment 3.3 Seek feedback from users, where appropriate 3.4 Document new technology in a method consistent with organisational guidelines

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Learning	1.1, 1.3, 1.4, 2.3	• Investigates, evaluates and applies information from a range of complex and technical texts to expand own knowledge and identify new technologies that will benefit the organisation
Reading	1.2, 1.4, 2.3, 3.1-3.3	• Identifies and interprets technical online and hard copy documentation containing complex terminology and diagrams to identify new technologies that will benefit the organisation, and to determine organisational, WHS and environmental considerations
Writing	1.3, 3.3, 3.4	• Uses appropriate language and document structure to clarify evaluation criteria and enhance objectivity when developing checklists • Uses correct grammar, sentence structure and, as much as possible, plain English in all documentation

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		developed • Uses appropriate questioning strategies, avoiding loaded or leading questions, when developing feedback gathering documentation
Oral Communication	1.1, 1.2, 1.4, 2.3, 3.3	• Elicits information and feedback by using effective listening and questioning techniques, and language appropriate to the audience and subject matter to identify and evaluate new technologies • Uses clear, easy-to-understand language, translating technical terminology into plain English when talking to users
Navigate the world of work	3.1	• Appreciates the implications of legal and regulatory responsibilities related to own work and is beginning to recognise some general legal principles across work contexts
Get the work done	1.3, 1.4-1.6, 2.1, 2.2, 3.2	• Takes responsibility for planning and organising own workload, identifying ways of sequencing and combining elements for efficiency • Understands the purposes, specific functions and key features of common digital systems and tools • Tests and operates common digital tools and systems to effectively complete routine tasks • Takes responsibility for the outcomes of routine decisions related directly to own role

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTICT306 Migrate to new technology	ICAICT306A Migrate to new technology	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT306 Migrate to new technology

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- identify new and emerging technology in information and communications technology (ICT)
- test and evaluate new equipment for the benefit of the organisation
- use features and functions of new technologies, including software and equipment.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- discuss current technology trends and directions in ICT including:
  - hardware
  - new developments
  - new protocols
  - services
  - software
- describe the general features and capabilities of current industry hardware and software products
- outline information gathering techniques
- outline vendor product directions relating to specified technology.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general ICT industry, and include access to:

- a site where new technology may be used
- new equipment and software currently used in industry
- documents detailing work health and safely (WHS) standards, environmental guidelines and organisational requirements.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT401 Determine and confirm client business requirements

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to determine client business system requirements and verify the accuracy of the information gathered.

It applies to information and communications technology (ICT) personnel who are required to analyse client expectations and needs, and recommend business system changes.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine context of business need or problem	1.1 Establish the business problem to be investigated, including determining system boundaries, scope and the development methodology to be used 1.2 Choose information gathering method and develop questions appropriate to business problem 1.3 Develop objectives and identify expected outcomes to be achieved 1.4 Document the business problem

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ELEMENT	PERFORMANCE CRITERIA
	1.5 Submit documentation to appropriate person for substantiation
2. Gather information	2.1 Use chosen information gathering method to identify clients of the system and problems they encounter 2.2 Record client responses 2.3 Analyse gathered information to identify new system requirements and establish problem specifications 2.4 Document system requirements and problems 2.5 Analyse physical requirements and identify changes required to implement new systems
3. Confirm system specifications	3.1 Check documentation to ensure it meets client business needs 3.2 Submit documentation to the client for verification of accuracy and approval 3.3 Make changes to the documentation as necessary and indicated by the client 3.4 Submit documentation to client for final approval or sign-off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 2.3, 2.5, 3.1	• Identifies, analyses and evaluates information from a variety of sources containing complex systems related terminology to determine system performance requirements and establish solutions
Writing	1.2-1.4, 2.2, 2.4, 3.3	• Uses the correct spelling and grammar, plain English and, when necessary, systems related text and terminology to develop information gathering tools and document recommendations
Oral Communication	1.1, 2.1, 2.5, 3.2, 3.4	• Uses plain English, effective listening and questioning techniques and, where necessary, systems related terminology to elicit information

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		• Uses plain English and relevant terminology to liaise with clients, present information and obtain feedback
Get the work done	1.1-1.3, 2.1, 2.3, 2.5	• Takes responsibility for planning and organising own workload, identifying ways of sequencing and combining elements so work is undertaken methodically • Recognises and takes responsibility for addressing predictable and some less predictable problems in familiar work contexts • Understands the purposes, specific functions and key features of common digital systems and tools to provide current advice on systems and data gathering products

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTICT401 Determine and confirm client business requirements	ICAICT401A Determine and confirm client business requirements	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT401 Determine and confirm client business requirements

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- use investigative techniques to obtain information and document the business system problem
- produce a clear statement of business expectations and needs, including critical business requirements.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe a variety of data gathering techniques
- describe areas related to the client business in detail
- interpret functional organisational charts
- outline physical requirements of the client's business, taking into account current system functionality, geography, environment, client user and cost constraints
- describe products related to data capture
- discuss the role of stakeholders and the degree of stakeholder involvement.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general information and communications technology (ICT) industry, and include access to:

- current business needs
- a client expectations brief

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- business objectives
- systems, data gathering and appropriate software products.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT405 Develop detailed technical design

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to assist in the development of a detailed technical design.

It applies to individuals performing systems design tasks who are required to review and update technical design documents.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Assist in selecting technical design features	1.1 Select and revise design model based on iteration and design changes 1.2 Incorporate outstanding design points according to acceptance criteria 1.3 Distribute reports identifying changes and implications to appropriate person for review
2. Contribute to design review	2.1 Compare design against requirements and fix as necessary

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Confirm design with appropriate person 2.3 Use feedback mechanisms to gather information on design changes from client 2.4 Incorporate design changes where required
3. Contribute to development of program specifications	3.1 Implement modules by incremental development techniques 3.2 Identify user authority for each module 3.3 Prepare detailed specifications of module implementation for each module that will not be incrementally built 3.4 Prepare documentation according to requirements of the project

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 2.1, 2.3	• Identifies, analyses and evaluates a range of online and hard copy text containing complex systems design terminology, syntax and diagrams, and applies the information to the task
Writing	1.1, 1.2, 2.3, 2.4, 3.3, 3.4	• Uses correct spelling and grammar, plain English, systems design related terminology and diagrams to obtain feedback, document recommendations and prepare final project specifications
Oral Communication	1.1, 1.3, 2.2, 2.3	• Elicits and evaluates information using project related terminology and effective listening and questioning techniques • Uses plain English and, where necessary, project related terminology to liaise with clients, present information and obtain feedback
Interact with Others	1.3, 2.2, 2.3	• Selects and uses appropriate conventions and protocols when communicating with clients and co-workers in a range of work contexts • Uses a range of strategies to establish a sense of connection and build rapport with clients and co workers

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Get the work done	1.1-1.3, 2.1, 2.4, 3.1-3.3	• Uses familiar digital systems and tools to incorporate required changes to model • Applies formal processes when developing strategic initiatives, and plans tasks with logically sequenced steps • Initiates standard procedures when responding to familiar problems within immediate context • Uses familiar digital technologies and systems to access information, search and enter data and code, present information and communicate with others, cognisant of data security and safety

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTICT405 Develop detailed technical design	ICAICT405A Develop detailed technical design	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT405 Develop detailed technical design

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- define the client business domain and client's critical business functions and processes
- design and prepare a clear and best-fit technical design for a set project, incorporating:
  - changes to design model based on user requirements
  - detailed specification of modules
- produce updated documentation to reflect changes.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain various life cycle options
- describe design fundamentals and refinement
- discuss design quality metrics.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general information and communications technology (ICT) industry, and include access to:

- requirements model
- business requirements
- project deliverables
- acceptance criteria

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- current ICT blueprint.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT408 Create technical documentation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to create technical documentation that is clear to the target audience and easy to navigate.

It applies to individuals working as technical writers, designers, developers and support staff who are required to produce technical support documents of their work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and analyse documentation requirements and client needs	1.1 Consult with client to identify documentation requirements 1.2 Interpret and evaluate documentation requirements and confirm details with client 1.3 Investigate industry and documentation standards for requirements 1.4 Define and document the scope of work to be produced 1.5 Consult with client to validate and confirm the scope of work

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ELEMENT	PERFORMANCE CRITERIA
2. Design documentation	2.1 Identify information requirements with reference to layout and document structure 2.2 Create document templates and style guides consistent with information requirements 2.3 Conduct a review of the system in order to understand its functionality 2.4 Extract content that meets information requirements according to copyright restrictions 2.5 Develop the structure of the technical documentation, giving focus to the flow of information, style, tone and content format 2.6 Validate the technical documentation structure with the client
3. Develop documentation	3.1 Write technical documentation based on the template and scope of work using the information gathered 3.2 Translate technical terminology into plain English where appropriate 3.3 Apply content format and style according to documentation standards and templates
4. Evaluate and edit documentation	4.1 Submit technical documentation to appropriate person for review 4.2 Gather and analyse feedback 4.3 Incorporate alterations into the technical documentation 4.4 Edit the technical documentation for technical and grammatical accuracy
5. Prepare documentation for publication	5.1 Check that the completed technical documentation meets client requirements and scope of work 5.2 Submit the technical documentation to appropriate person for approval 5.3 Prepare the technical documentation for publication and distribution using appropriate channels

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.2, 1.3, 2.3, 2.4, 4.2, 4.4, 5.1	• Identifies and evaluates organisational documentation and standards, and a range of online and hard copy text containing technical project related terminology and diagrams, then applies the information to the development of appropriate technical documentation • Interprets and comprehends a large range of diagrams, icons, and computer generated text
Writing	1.4, 2.2, 2.5, 3.1-3.3, 4.3, 4.4, 5.3	• Uses correct spelling and grammar, plain English and specific terminology relevant to the project • Uses organisational naming conventions, terminology, style and format to develop technical documents to organisational standards
Oral communication	1.1, 1.3-1.5, 2.1, 2.3, 2.6, 4.1, 4.2	• Elicits and evaluates information using effective listening and questioning techniques • Uses simple and relevant language to confirm understanding of requirements, present information and obtain feedback
Interact with others	5.2	• Selects the appropriate form, channel and mode of communication for a specific purpose relevant to own role
Navigate the world of work	1.3, 2.4	• Appreciates the implications of legal and regulatory responsibilities related to own work and is beginning to recognise some general legal principles applicable across work contexts
Get the work done	1.4, 2.1, 2.2, 2.5, 3.3, 4.2	• Takes responsibility for planning and organising own workload, identifying ways of sequencing and combining elements for greater efficiency • Uses familiar digital systems and tools to access, organise, analyse and display information relevant to role • Automatically implements standard procedures for routine decisions

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTICT408 Create technical documentation	ICAICT408A Create technical documentation	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT408 Create technical documentation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- establish customer needs
- design and develop technical documentation, such as system, procedures, training material and user guides, incorporating appropriate standards
- update document with client feedback
- prepare documentation for publication.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe content features, such as clarity and readability
- outline the principles of document design, web design and usability
- explain the functions and features of templates and style guides
- explain instructional design principles
- list organisational policies, procedures and standards that cover document design.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general information and communications technology (ICT) industry, and include access to:

- technical specifications
- documentation standards

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- organisational resources and documentation
- information about system, platform, network or application being documented
- relevant standards
- appropriate word processing software.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT424 Address cyber security requirements

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Application

This unit describes the skills and knowledge required to determine the cyber security requirements of an organisation and use a range of resources to protect valuable assets.

This unit applies to individuals who are required to participate in the identification and implementation of cyber security controls.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Analyse cyber security requirements	1.1 Identify and document valuable assets to create register of valuable assets 1.2 Perform threat and risk assessment on valuable assets register to identify and document cyber security requirements 1.3 Review current cyber security controls against the cyber security requirements to identify cyber security gaps
2. Select and implement cyber security controls	2.1 Identify cyber security controls which address cyber security gaps

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	2.2 Determine specific cyber security controls to address cyber security gaps against the organisation's risk appetite 2.3 Seek feedback from organisational representative and agree on cyber security controls to implement 2.4 Implement, test and document agreed cyber security controls to address cyber security gaps 2.5 Seek feedback from organisational representative to identify discrepancies between cyber security controls and cyber security requirements
3. Maintain and improve security controls	3.1 Determine currency of valuable assets register to identify new valuable assets and changed threats and risks 3.2 Identify, determine, and agree on cyber security controls to address new cyber security gaps 3.3 Implement and document new and modified cyber security controls to address cyber security gaps

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	**Description**
Learning	• Identifies, plans and implements strategies to manage gaps in cyber security knowledge
Reading	• Analyses and consolidates information and data from sources, against defined criteria and requirements, and checks for accuracy and completeness • Recognises and interprets textual information to determine specific information about security incidents
Writing	• Develops material for a specific audience, using clear and detailed language in order to convey explicit information
Oral Communication	• Articulates information clearly, using specific and relevant language suitable to audience to convey recommendations and provide verbal reports • Uses listening and questioning techniques to confirm understanding
Numeracy	• Extracts and evaluates the mathematical information embedded in a range of tasks and texts
Navigate the world of work	• Accepts responsibility and ownership for the task and makes decisions on completion parameters and the need for coordination with others • Takes personal responsibility for following explicit and implicit

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	policies, procedures and legislative requirements
Interact with others	• Selects form, channel and mode of communication for a specific purpose relevant to own role
Get the work done	• Plans strategic priorities and outcomes within a flexible, efficient and effective context, in a diverse environment exposed to competing demands • Gathers and analyses data, and seeks feedback, to improve plans and processes • Makes decisions in a complex and diverse environment, using input from a range of sources • Explores and incubates new ideas through unconstrained analysis and critical thinking, to develop and improve the organisation's controls

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTICT424 Address cyber security requirements	N/A	New unit	No equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT424 Address cyber security requirements

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements and performance criteria of this unit; including evidence of the ability to:

- For two difference cyber security requirements:
  - analyse cyber security requirements to protect valuable assets
  - determine threats and risks based on current controls and requirements
  - identify and apply controls to protect valuable assets
  - identify improvements to cyber security controls
  -

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

- Common cyber security threats and risks
- Common cyber security controls, key features, and associated advantages and disadvantages
- Cyber security control implementation processes and procedures
- Industry standards relevant to cyber security
- Testing procedures and processes
- Legislative and regulatory requirements relevant to cyber security
- Approaches to performing cyber security threat and risk assessment
-

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in an ICT working environment or workplace. This includes access to:

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- Organisational representative
- Organisational cyber security requirements
- Specifications of existing cyber security controls
- Information on organisational assets, both valuable and non-valuable
- Software required for performing cyber security threat and risk assessments

Assessors of this unit must satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT426 Identify and evaluate emerging technologies and practices

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Application

This unit describes the skills and knowledge required to identify emerging technologies and practices in the ICT sector and evaluate their potential impact on organisational practices.

It applies to individuals who work across a wide range of information technology (IT) areas, including technical support, network administration, web technologies, software applications and digital media technologies.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify emerging technologies and practices in IT	1.1 Access sources of information on emerging technologies and practices in the IT industry 1.2 Identify and document emerging technologies and practices relevant to organisational context
2. Evaluate the impact of emerging technologies	2.1 Evaluate features and functions of emerging technologies and practices to determine advantages and disadvantages

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and practices	relevant to organisational context 2.2 Assess and document potential impacts of emerging technologies and practices on current organisational technologies and practices 2.3 Seek and obtain feedback from organisational representative on assessment of impact of emerging technologies and practices and incorporate feedback into report
3. Develop strategies to prepare for emerging technologies and practices	3.1 Develop and document strategies to prepare organisation for impacts of emerging technology and practices 3.2 Identify and document changes to organisational technologies and practices required based on strategies to determine organisational response 3.3 Seek and obtain feedback from organisational representative on strategy and organisational response from organisation and incorporate feedback into strategy and organisational response

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	**Description**
Learning	• Investigates, evaluates and applies information from a range of complex and technical texts to expand own knowledge and to identify current and emerging technology, trends and practices that are likely to impact the organisation • Considers the reliability of an information source against criteria including the author's background, the intended audience and purpose, and the date of publication • Identifies reputable sources of information from which to gather resources and information
Reading	• Identifies and interprets technical documentation containing complex terminology and diagrams to identify current and emerging technologies
Oral Communication	• Uses clear, easy-to-understand language, translating industry-specific terminology into plain English when necessary
Navigate the world of work	• Recognises opportunities to enhance personal professional development • Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work context

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Interact with others	• Discusses ideas and complex information on issues and developments in the IT industry
Get the work done	• Recognises some general design and operating principles of digital tools

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTICT426 Identify and evaluate emerging technologies and practices	N/A	New unit	No equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT426 Identify and evaluate emerging technologies and practices

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements and performance criteria of this unit; including evidence of the ability to:

- Describe and evaluate purpose, features, attributes and potential applications of:
  - three emerging technologies
  - three emerging practices in the ICT sector
- Develop a strategy to respond to each of the three emerging technologies and three emerging practices, including:
  - potential organisational opportunities and threats resulting from the emerging technology and practice
  - likely impact on current organisational technologies and practices
  - objectives of the organisation in responding to the emerging technology or practice
  - changes required in order to achieve intended objectives of the organisation
  - considerations for how to implement the changes required
  -

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

- Research approaches for emerging technologies and practices in the ICT sector and their potential impact on current technologies and practices
- Technology implementation planning methods
- Organisational technologies and practices

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in an ICT working environment or workplace. This includes access to:

- Organisational representative

Assessors of this unit must satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT428 Select cloud storage solutions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Application

This unit describes the skills and knowledge required to select cloud storage solutions based on the analysis of organisational requirements. It includes the development of implementation strategies to ensure that the organisation is prepared for the implementation of the selected cloud storage solutions.

This unit applies to individuals who undertake the evaluation of organisational data storage requirements and plan the implementation for the organisation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine requirements for a cloud storage solution	1.1 Review organisational data storage requirements and guidelines, and industry standards to determine need for cloud storage solutions within scope of own responsibilities 1.2 Identify and evaluate cloud storage options with respect to organisational data storage requirements 1.3 Identify data and security risks to evaluate cloud storage

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	options for organisations
2. Develop an implementation plan for implementing cloud storage solutions	2.1 Select cloud storage options to satisfy organisational data storage requirements 2.2 Identify potential providers of cloud storage solutions and evaluate providers with respect to organisational data storage requirements 2.3 Develop and document an implementation plan for the cloud storage solution aligned to the organisation data storage requirements within scope of own responsibilities

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	**Description**
Reading	• Draws on a broad range of strategies to build and maintain understanding throughout complex texts • Organises, evaluates and critiques ideas, and information, from a wide range of complex texts
Writing	• Generates complex written texts, demonstrating control over a broad range of writing styles and purposes
Numeracy	• Analyses and synthesises highly-embedded mathematical information, in a broad range of tasks and texts • Extracts numerical information to calculate cloud storage and performance requirements and costs
Navigate the world of work	• Develops, and implements, strategies that ensure that the organisational and regulatory requirements are met • Monitors and reviews the organisation’s requirements and adherence to legislative requirements, in order to implement and manage change
Get the work done	• Plans strategic priorities and outcomes within a flexible, efficient and effective context, in a diverse environment exposed to competing demands • Gathers and analyses data, and seeks feedback, to improve plans and processes • Makes high-impact decisions in a complex and diverse environment, using input from a range of sources

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTICT428 Select cloud storage solutions	ICTICT423 Select cloud storage strategies	Edits to title, application, elements 1 and 2, and assessment requirements to clarify intent and scope. Edits to foundation skills to reflect unit content.	Equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT428 Select cloud storage solutions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements and performance criteria of this unit; including evidence of the ability to:

- Determine the cloud storage needs of an organisation within the scope of own responsibilities including the identification of three cloud storage options through considering the following:
    - data
    - security
    - performance
    - usability
    - and broader organisational benefits and detriments
- Review service level agreements (SLAs) for the three identified cloud storage options to identify hidden costs, ownership of data, disaster recovery and rights to retrieval, availability and performance, security standards and audit rights, data storage location and dispute mediation processes in the identification of potential cloud service providers
- Evaluate the performance and usability of the three cloud storage options
- Develop and document one cloud storage implementation plan for an organisation including the evaluation and selection of cloud storage solutions

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

- Key requirements of an ICT implementation plan
- Business types that may have cloud storage requirements
- Current trends and directions in information and communications technology (ICT), and the major industry technology standards used in cloud storage options
- Advantages and disadvantages of cloud storage options and providers
- Major themes relating to data and cyber security and their application within the organisational environment

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- Current industry hardware and software products and their general features, capabilities and application as relevant to cloud storage options
- Characteristics relating to cloud storage that must be included in service level agreements
- Costs and organisational impacts relevant to a cloud storage strategy
- SLA terms related to service availability and performance

Assessment Conditions

Skills must be demonstrated in a workplace or simulated environment where conditions are typical of those in an ICT working environment or ICT workplace. This includes:

- A site where cloud storage technologies may be used
- Organisational data storage requirements and guidelines relating to the storage of information
- Cloud storage options currently used in industry
- Service level agreements (SLA) documentation relevant to cloud storage providers
- Standards, guidelines, and organisational requirements relating to work health and safety (WHS) and sustainability

Assessors of this unit must satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT503 Validate quality and completeness of system design specifications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to check the system design specifications against outcomes and quality standards.

It applies to individuals working as system designers who are required to validate system design specifications to ensure that they meet the required organisational audit standards.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine audit criteria	1.1 Investigate the system or product for which the quality audit is being performed to understand its functionality 1.2 Determine the objectives to be achieved by the quality audit 1.3 Determine the scope of the quality audit 1.4 Develop a list of audit criteria and quality benchmarks 1.5 Develop a metric to classify the audit criteria 1.6 Determine the audit technique or methodology to be

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ELEMENT	PERFORMANCE CRITERIA
	followed 1.7 Examine and detail the resources available to carry out the audit 1.8 Document the objectives, scope, criteria, technique and resources in an audit plan
2. Audit aspects of the final system	2.1 Use the audit criteria to collect evidence about the functionality and quality of the final system, including documentation 2.2 Use a checklist to monitor audit progress 2.3 Document audit outcomes as the audit progresses
3. Review and confirm contract and specifications	3.1 Review system contract against audit outcomes 3.2 Compare system functionality against audit outcomes and system contract 3.3 Identify items of non-compliance where audit outcomes do not meet performance targets or fall short of contract requirements 3.4 Review system procedures for corrective action 3.5 Document items of non-compliance and proposed corrective action

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.3, 1.7, 3.1-3.3	• Interprets, analyses and evaluates text with complex terminology, diagrams, code, syntax, icons and symbols to: evaluate current system functionality, determine audit objectives, scope and criteria, and review audit findings
Writing	1.4, 1.5, 1.7, 1.8, 2.2, 2.3, 3.5	• Uses plain English, appropriate grammatical structures and terminology, diagrams and flow charts, numerical information, and formatting and document structure relevant to the job role and organisation to develop an audit plan and document

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		audit results
Oral Communication	1.1-1.3, 1.7, 2.1, 3.1, 3.4	• Uses effective listening and open questioning techniques to obtain information and elicit the view and opinions of others • Uses appropriate questioning strategies, avoiding loaded or leading questions, when collecting evidence • Uses specific and complex system/product terminology when applicable, translating complex terms into plain English as required by the audience
Numeracy	1.2-1.5, 3.1-3.4	• Interprets and analyses numerical and financial information, and applies mathematical calculations and financial functions related to performance and financial metrics developed
Navigate the world of work	1.4	• Recognises and follows explicit and implicit protocols, and meets expectations associated with own role
Get the work done	1.1-1.7, 3.2-3.4	• Applies formal processes when planning more complex tasks, producing plans with logically sequenced steps and reflecting some awareness of resource constraints • Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world and uses these to troubleshoot • Uses analytical processes in a variety of situations, setting goals, gathering relevant information and identifying and evaluating options against agreed criteria

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTICT503 Validate quality and completeness of system design specifications	ICAICT503A Validate quality and completeness of system design specifications	Updated to meet Standards for Training Packages	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT503 Validate quality and completeness of system design specifications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- determine audit criteria
- conduct an audit
- review system procedures for non-compliance
- propose corrective actions.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline acceptance criteria
- translate detailed design principles and specification standards
- discuss fault tolerance technologies
- describe the process of quality audits
- discuss quality levels, both generally and as required by the organisation.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general information and communications technology (ICT) industry, and include access to:

- audit tools
- documentation guidelines
- relevant standards and benchmarks

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- service level agreement (SLA)
- archive policies
- acceptance criteria
- ICT security specifications
- live system, including database, system files and designed interface
- technical specifications of system.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT505 Determine acceptable developers for projects

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to ensure that development projects are contracted to developers who are able to accomplish the task within the mutually agreed parameters of the project.

It applies to individuals who manage a range of information and communications technology (ICT) projects, including software development, hardware procurement and implementation, network analysis and deployment, and web and/or system development.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Specify development requirements	1.1 Prepare and document clear specifications for the project 1.2 Submit specifications to appropriate person for sign-off and authority to contract developers 1.3 Prepare request for tender document if appropriate, using specifications 1.4 Prepare and document agreed selection guidelines

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ELEMENT	PERFORMANCE CRITERIA
2. Identify potential developers	2.1 Investigate potential developers in line with organisational guidelines 2.2 Request development quotes from potential developers 2.3 Assess submitted quotes against selection guidelines and make a shortlist of potential developers, where appropriate
3. Select a potential developer	3.1 Assess the capability of developers to do the project work 3.2 Confirm that potential developers understand the scope of the work to be undertaken 3.3 Conduct a due diligence check where appropriate and assess the quality of developers 3.4 Select appropriate developers using selection criteria 3.5 Inform developers of their selection according to organisational guidelines
4. Sign off the selection process	4.1 Prepare contract for signing according to enterprise procedures 4.2 Sign contract and prepare developers to commence work according to contract

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	2.1, 2.3, 3.1, 3.3	• Interprets and evaluates a range of documentation containing ICT specific terminology and budgetary information to obtain information relating to project requirements and to identify and select developers
Writing	1.1, 1.3, 1.4, 2.3, 3.5, 4.1	• Uses correct spelling and grammar, clear plain English, task related terminology, and a formal document structure, format and style appropriate to the audience and organisation
Oral Communication	1.2, 2.1, 2.2, 3.1-3.3, 3.5, 4.2	• Assumes a formal manner and uses effective listening and questioning techniques to clarify project requirements and elicit information about

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		the capacity, capability and qualifications of developers
Numeracy	1.1, 2.3, 4.1	• Interprets and analyses numerical and budgetary information, and applies mathematical calculations to manage timelines and budgets
Navigate the world of work	2.1, 3.5, 4.1	• Keeps up to date on changes to legislation or regulations relevant to own rights and responsibilities, and considers implications of these when negotiating, planning and undertaking work • Understands how own role meshes with others and contributes to broader work goals
Interact with others	1.2	• Actively identifies the requirements of important communication exchanges, selecting appropriate channels, format, tone and content to suit purpose and audience
Get the work done	1.1, 1.3, 1.4, 2.1, 2.3, 3.1, 3.3, 3.4, 4.1	• Uses a combination of formal logical planning processes and an increasingly intuitive understanding of context to identify relevant information and risks • Uses systematic, analytical processes in complex situations, gathering relevant information and identifying and evaluating options against a pre-determined set of criteria • Considers the strategic and operational potential of digital trends to achieve work goals, enhance work processes, create opportunities and reduce risks

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTICT505 Determine acceptable developers for projects	ICAICT505A Determine acceptable developers for projects	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT505 Determine acceptable developers for projects

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- specify requirements for a project
- prepare information for tender document and document selection criteria
- seek suitable developer candidates
- select suitable developers
- prepare and implement contracts procedure.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline the processes and procedures relating to business liaison
- summarise business negotiation and interview techniques
- outline the process for tendering and writing tenders
- outline the principles and features for preparing contracts
- identify and describe the state and federal legislative requirements and industry standards that relate to:
  - due diligence
  - codes of practice
  - ethics
  - industry and e-commerce standards
  - contracts.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general information and communications technology (ICT) industry, and include access to:

- a business plan
- procurement policies
- selection policies.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT506 Implement process re-engineering strategies

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to consider a variety of potential process re-engineering strategies and to make appropriate selections for implementation in an organisation.

It applies to individuals who are senior information and communications technology (ICT) staff required to implement system redesign, and administer and manage ICT support in small-to-medium enterprises (SMEs).

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Develop process re-engineering strategies	1.1 Research and determine target process for re-engineering action 1.2 Develop process re-engineering plan 1.3 Determine and document strategic importance of process 1.4 Establish and document performance standards and benchmarks for new process

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ELEMENT	PERFORMANCE CRITERIA
	1.5 Seek feedback and suggestions from client on proposed process re-engineering
2. Implement process re-engineering strategies	2.1 Compare suggestions with process re-engineering plan to determine suitability for business requirements 2.2 Incorporate suggestions where appropriate 2.3 Implement new process into business structure and leave sufficient scope for changing capacity or upgrades
3. Monitor organisational context	3.1 Monitor new process to measure performance levels 3.2 Determine and document benefits of the new process to the business 3.3 Identify and document training needs for staff 3.4 Analyse cultural and political impact of the new process 3.5 Document new process and disseminate information to appropriate person

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.2-1.4, 2.1, 3.2, 3.4	• Identifies, analyses and evaluates complex online and hard copy documentation containing specific terminology, diagrams and numerical information to develop process re-engineering strategies and determine the benefits and impact of the process on the business
Writing	1.2-1.5, 2.2, 3.2, 3.3, 3.5	• Uses plain English, appropriate grammatical structures and terminology, diagrams and flow charts, numerical information, and formatting and document structure relevant to the job role and organisation
Oral Communication	1.1, 1.5, 2.3, 3.1, 3.3, 3.5	• Articulates implementation requirements and strategies clearly, using appropriate tone, style, body language and reflective responses • Uses effective listening and questioning techniques to elicit feedback and to ensure understanding of the implementation process has occurred

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Numeracy	1.4, 3.1	• Interprets and analyses numerical and budgetary information, and applies mathematical calculations to evaluate the benefits of the process re-engineering on the business
Navigate the world of work	1.4, 2.1, 3.5	• Contributes to roles and responsibilities of self and others • Modifies or develops organisational policies and procedures to comply with legislative requirements and organisation goals
Interact with others	1.5, 3.3-3.5	• Selects, implements and seeks to improve protocols governing communications to clients and co-workers in a range of work contexts • Elicits feedback and provides feedback to others in order to improve self or workgroup behaviours
Get the work done	1.1-1.4, 2.1-2.3, 3.1-3.5	• Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others and taking into account capabilities, efficiencies and effectiveness • Monitors progress of plans and schedules, and reviews and changes them to meet new demands and priorities • Applies systematic and analytical decision making processes for complex and non-routine situations • Investigates new and innovative ideas as a means to continuously improve work practices and processes through consultation and formal and analytical thinking • Uses and investigates new digital technologies and applications to manage and manipulate data and communicate effectively with others in a secure and stable digital environment

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTICT506 Implement process re-engineering strategies	ICAICT506A Implement process re-engineering strategies	Updated to meet Standards for Training Packages	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT506 Implement process re-engineering strategies

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- develop and document a re-engineering process that supports organisational objectives
- take into consideration the complex interdependencies between organisational and external drivers
- implement a re-engineering process
- monitor and analyse the impact of the process in the organisation.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- discuss business case preparation process and how it can be applied to developing organisational strategies
- identify and summarise relevant laws and standards as they apply to process re-engineering strategies, including:
  - benchmarks
  - copyright
  - intellectual property
  - ethics
  - cultural and political diversity
- outline the impact that new processes may have on an organisation
- outline procedures relating to consulting internally and externally.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general information and communications technology (ICT) industry, and include access to:

- a process re-engineering plan
- analysis software
- e-business models
- modelling software
- an organisational strategy
- an organisational structure and culture
- a personal computer (PC)
- stakeholder analysis.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT508 Evaluate vendor products and equipment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to evaluate and test a range of vendor products and equipment against a client's business requirements.

It applies to individuals in a range of information and communications technology (ICT) areas who are required to assess hardware and software products.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish business requirements	1.1 Identify and prioritise business requirements 1.2 Identify conflicting or overlapping business requirements 1.3 Specify budget and available resources 1.4 Validate business requirements, budget and resource needs with client
2. Identify vendor products and equipment	2.1 Investigate a representative range of vendor products and equipment

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Identify and document interdependencies 2.3 Specify and document technical alternatives available to the business 2.4 Determine and document availability of products and equipment 2.5 Ensure vendor products and equipment meet Australian or other standards
3. Test vendor products and services	3.1 Develop valid and reliable test regime with appropriate measurements 3.2 Establish test environment, including calibrated measuring equipment 3.3 Undertake testing of products or equipment and document results 3.4 Undertake revised testing where initial tests are inconclusive or where alternative product configuration may meet business requirements
4. Evaluate vendor products, services and equipment	4.1 Rate vendor products for quality, performance and support 4.2 Rate vendor products for fit with client needs 4.3 Establish product limitations, performance, integration capabilities and costs, and compare with established business requirements 4.4 Prepare cost-benefit analysis
5. Prepare evaluation report	5.1 Document product information in order of preference 5.2 Recommend preferred product, including the reasoning behind recommendations 5.3 Prepare a report containing solution details 5.4 Submit report to client for approval

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description

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Reading	1.1-1.3, 2.1, 2.2, 2.4, 2.5, 4.1, 4.2	• Identifies, analyses and evaluates highly technical documents, diagrams, business strategies and statistical and financial information
Writing	1.3, 1.4, 2.2-2.4, 5.1, 5.3	• Integrates information and ideas from a number of sources using specialised and cohesive language and formal document structures
Oral Communication	1.1, 1.2, 1.4, 2.1-2.4, 5.4	• Elicits and evaluates information using effective listening and open questioning techniques • Uses simple and relevant language to obtain information, confirm understanding, liaise with the client and obtain feedback
Numeracy	1.1, 1.3, 1.4, 4.3, 4.4, 5.2, 5.3	• Interprets and analyses a range of statistical and financial data relating to products, equipment and integration costs • Uses a range of software tools to apply statistical and financial functions, and prepare a cost-benefit analysis
Navigate the world of work	2.5	• Appreciates the legal and regulatory responsibilities related to own work and recognises some legal principles across work contexts
Interact with others	5.4	• Actively identifies the requirements of important communication exchanges, selecting appropriate channels, format, tone and content to suit purpose and audience
Get the work done	1.1-1.3, 2.1- 2.4, 3.1-3.4, 4.1-4.3	• Develops plans to manage relatively complex non-routine tasks with an awareness of how they may contribute to longer term operational and strategic goals • Uses systematic, analytical processes in complex non-routine situations, setting goals, gathering relevant information and identifying and evaluating options against agreed criteria • Actively identifies systems, devices and applications with potential to meet current and/or future needs

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**

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Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTICT508 Evaluate vendor products and equipment	ICAICT508A Evaluate vendor products and equipment	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT508 Evaluate vendor products and equipment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- establish business requirements
- evaluate a range of vendor products and equipment against requirements
- test and select the most appropriate products
- document the selected items and selection rationale.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline the relevance and application of the following for evaluating and selecting products:
  - code of ethics
  - international standards
  - vendor products
  - client business domain
  - copyright and intellectual property
  - general features and capabilities of current industry accepted hardware and software products
- discuss current and future technical systems considerations required by business
- discuss the features and function of relevant hardware components and software products, and the interaction between them.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general information and communications technology (ICT) industry, and include access to:

- client functional requirements
- hardware and software specifications from vendors
- test procedures and activities.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT517 Match ICT needs with the strategic direction of the organisation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Application

This unit describes the skills and knowledge required to ensure information and communications technology (ICT) products and systems match the strategic direction of the organisation.

It applies to individuals whose responsibilities may include improving, evaluating, acquiring, maintaining and supporting ICT for organisations.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Evaluate current strategic plan and propose changes	1.1 Analyse and document current strategic plan of organisation against industry environment and organisational objectives 1.2 Determine and document current state of ICT systems and practices in organisation 1.3 Compare strategic plan objectives and current state of ICT to determine ICT gaps, improvement opportunities, and proposed

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	changes 1.4 Report on proposed changes, gaps and improvement opportunities to superior
2. Evaluate effect of changes	2.1 Evaluate impact of proposed changes to ICT systems and products against strategic objectives of organisation 2.2 Evaluate the difficulty of implementing proposed changes to ICT systems and products 2.3 Prioritise proposed changes to refine opportunities and assist in scheduling implementation 2.4 Document evaluation process and provide to superior for feedback
3. Plan implementation of changes	3.1 Develop action plan to implement proposed changes including prioritised schedule and consistency with organisational policy and procedures 3.2 Detail standards, targets and implementation methods in action plan 3.3 Provide action plan to superior for feedback and approval

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	**Description**
Reading	• Reviews, analyses and evaluates complex online and hard copy documentation containing ICT specific terminology, diagrams and numerical information to determine ICT gaps and improvement opportunities
Writing	• Uses plain English, together with vocabulary, grammatical structures, terminology, diagrams, numerical information, formatting and structure relevant to the job role and organisation
Oral Communication	• Uses plain English, translating technical terminology when necessary, to communicate with a range of personnel and determine objectives, articulate ideas and requirements, and develop plans • Elicits information using effective listening and questioning techniques
Numeracy	• Interprets numerical data and applies mathematical calculations to assess the financial implications of introducing changes
Navigate the	• Accepts responsibility and ownership for the task and makes decisions

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world of work	according to organisational needs and the need for coordination with others • Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements
Interact with others	• Selects and uses appropriate conventions and protocols when communicating with clients and colleagues in a range of work contexts • Recognises and accommodates basic differences and priorities of others • Cooperates with others and contributes to work practices where joint outcomes are expected and deadlines are to be met
Get the work done	• Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others and taking into account capabilities, efficiencies and effectiveness • Applies systematic and analytical decision making processes for complex and non-routine situations • Investigates new and innovative ideas as a means to continuously improve work practices and processes through consultation and formal and analytical thinking • Uses and investigates new digital technologies and applications to manage and manipulate data and communicate effectively with others in a secure and stable digital environment

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTICT517 Match ICT needs with the strategic direction of the organisation	ICTICT511 Match ICT needs with the strategic direction of the enterprise	Edits to title, application, elements 1–3, assessment requirements and foundation skills to clarify intent and scope.	Equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT517 Match ICT needs with the strategic direction of the organisation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements and performance criteria of this unit; including evidence of the ability to:

- For one organisation:
  - interpret a strategic plan and objectives of the organisation
  - evaluate the current state of ICT in the organisation
  - identify possible gaps and opportunities in ICT and evaluate organisational impact with reference to the strategic plan and the objectives
  - determine and prioritise proposed changes to meet organisational needs
  - evaluate the difficulty of implementing proposed changes
  - develop an action plan for implementation

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

- Key sections of an action plan for ICT implementation projects
- Methods of evaluation and planning approaches to technical problems and strategic objectives
- Methods of evaluation of competing and complementary internal and external ICT systems and products
- Current and emerging system and product trends and directions

Assessment Conditions

Skills must be demonstrated in a workplace or simulated environment where conditions are typical of those in an ICT working environment or ICT workplace. This includes:

- A site where ICT needs and strategic directions of the organisation are coordinated
- Detailed information relating to a strategic organisation plan, objectives, and direction

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- Organisational policies and procedures relating to the implementation of ICT changes
- Individual superior in the organisation
- Information on current ICT systems and practices in the organisation including operating systems, hardware, and security

Assessors of this unit must satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT608 Interact with clients on a business level

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to interact with clients at a management level.

It applies to individuals working as management personnel in a range of information and communications technology (ICT) areas who are responsible for maintaining client relationships.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Review client's business domain	1.1 Research organisational service standards, values and culture to understand the organisational environment 1.2 Investigate and document the goods and services provided by the organisation 1.3 Review current service level agreements (SLAs) if appropriate
2. Develop new business	2.1 Research client service needs and preferred level of service

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ELEMENT	PERFORMANCE CRITERIA
with client	2.2 Research opportunities for new business with client 2.3 Develop draft proposals to cover these new initiatives
3. Negotiate new business initiatives	3.1 Conduct a session with the client to present the new opportunities 3.2 Present proposals to the client in a clear, concise and comprehensive manner 3.3 Present proposed cost and timeframes to the client 3.4 Negotiate terms with the client and record alterations if required 3.5 Clarify areas of uncertainty or disagreement 3.6 Document agreement negotiated with the client
4. Monitor, adjust and implement procedures to maintain client focus	4.1 Assess progress in achieving new client initiatives 4.2 Gather client feedback to improve the proposals 4.3 Adjust service provided to the client based on client feedback and in line with organisational guidelines 4.4 Document changes to new provisions

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.3, 2.1, 2.2, 4.1, 4.2	• Identifies, analyses and evaluates a range of complex information to identify relevant and key information
Writing	2.3, 3.6, 4.4	• Uses plain English, appropriate grammatical structures and specialised terminology, diagrams and flow charts, logical document structures and formatting relevant to the job role and organisation to record document proposals and agreements
Oral Communication	1.1-1.3, 2.1, 2.2, 3.1-3.5, 4.1, 4.2	• Uses open questioning and effective listening techniques to elicit information, clarify requirements and conduct effective negotiations • Uses appropriate vocabulary, grammatical structure,

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		voice tone, body language and reflective responses to build business relationships and present proposals
Numeracy	1.2, 1.3, 2.3, 3.3-3.5, 4.3, 4.4	• Interprets numerical information and applies mathematical calculations and financial functions relating to time durations and projected costs
Navigate the world of work	1.3, 4.3	• Recognises and responds to both explicit and implicit protocols within familiar work contexts and appreciates the importance of identifying and responding to organisational procedures
Interact with others	3.1, 3.2, 3.4	• Invests considerable time and energy in building and maintaining effective working relationships within and beyond immediate work context, recognising and intuitively responding to the subtle and complex mix of factors at play in every interaction
Get the work done	1.1, 1.2, 2.1-2.3, 4.1	• Takes responsibility for defining key aspects of own workload, balancing own needs and priorities with new opportunities • Makes decisions quickly and intuitively in familiar situations requiring immediate attention, drawing on past experience to identify key variables, consider possible implications of different courses of action and determine the best course of action • Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world • Demonstrates a sophisticated understanding of expectations, social protocols and online etiquette, intuitively selecting the appropriate channel, content and tone for diverse purposes and audiences

New Topic (129)

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTICT608 Interact with clients on a business level	ICAICT608A Interact with clients on a business level	Updated to meet Standards for Training Packages	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT608 Interact with clients on a business level

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- assemble a proposal for a new business initiative
- develop a strong awareness of the clients business
- present and negotiate a proposal with the client
- formulate and implement new business
- monitor and maintain client relationship and requirements of service.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- discuss business practices relevant to understanding client needs, including:
  - change management
  - information gathering techniques
  - planning process, including development of information and communications technology (ICT) business solutions
  - preparation of reports
- identify current industry accepted hardware and software products relevant to client services and support, including:
  - general features and capabilities
  - vendor product directions
- identify and interpret legal principles of commercial contracts and service level agreements (SLAs)
- interpret organisational policies, plans and procedures, including contracting
- summarise the concepts of negotiation and the process for building business relationships.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general ICT industry, and include access to:

- organisational policies, procedures and SLAs for the ICT industry
- contexts for negotiating agreements and contracts
- current ICT hardware and software products.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT801 Lead research into identifying new marketplace opportunities

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to lead the research, evaluation and recommendation of new organisational initiatives, based on perceived marketplace opportunities.

It applies to individuals who work as strategic business analysts in medium to large organisations in senior roles, who lead new business initiatives and transformation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Direct the research into the organisation's business domain	1.1 Research the sectors in the relevant industry for trends that may yield viable business opportunities 1.2 Research business initiatives undertaken by competitor organisations, to address the same or similar opportunities, and analyse the resources required to undertake such initiatives or project opportunities 1.3 Identify the strategies for realising identified business

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ELEMENT	PERFORMANCE CRITERIA
	initiatives, including sub-contracting of suitable elements, where applicable 1.4 Research the legal, environmental and social implications of the identified initiatives
2. Evaluate the new business initiatives	2.1 Initiate, and oversee, the market research for potentially viable, identified business opportunities 2.2 Gauge the likely impacts of candidate initiatives on the business enterprise, including specific legal, financial and transformational implications 2.3 Critically evaluate the delivery strategies for anticipated products, or services, stemming from candidate initiatives
3. Explore the feasibility of the new initiatives	3.1 Formulate the selection criteria, based on the strategic business objectives 3.2 Facilitate a feasibility study, including a cost benefit analysis 3.3 Select the most feasible option against the selection criteria 3.4 Recommend the preferred initiative

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 1.3, 1.4, 2.1, 3.3	• Identifies, analyses, and critically evaluates complex textual information, to identify industry trends and business initiatives
Writing	2.1, 3.1, 3.4	• Integrates information and ideas from a number of sources, utilising the appropriate analysis tools, diagrams, specialised and cohesive language, and formal document structures, to develop criteria and reports
Oral Communication	1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.3, 3.2, 3.4	• Elicits the view and opinions of others, and obtains information, by using effective listening and open questioning techniques • Participates in a verbal exchange of ideas/solutions, and uses detailed and clear

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		language, to clarify and present information, and to facilitate a feasibility study • Uses the appropriate tone, style, body language and reflective responses, when clarifying information to present recommendations
Numeracy	1.2, 1.3, 2.1, 2.2, 3.1, 3.2, 3.3	• Uses a range of statistical and financial calculations and functions, the appropriate software tools, and correct document structure, to analyse market research results and to conduct a feasibility study, and a cost benefit analysis
Navigate the world of work	1.4, 2.2	• Understands own legal rights and responsibilities, and extends the understanding of legal implications across work contexts
Get the work done	1.1, 1.2, 1.3, 2.1, 2.3, 3.1, 3.2, 3.3	• Recognises the critical importance of clarifying, focusing and aligning goals, and expectations, and uses the process to build ownership of, and broad commitment to, achieving outcomes • Takes responsibility for high-impact decisions in complex situations, involving many variables and constraints • Keeps abreast of new ideas and possibilities beyond own context, borrowing, adapting, combining, and redesigning ideas, for own purposes, or using as a provocation to rethink current approaches

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTICT801 Lead research into identifying new marketplace opportunities	ICAICT701A Lead research into identifying new marketplace opportunities	Updated to meet Standards for Training Packages. Recoded and minor changes to Performance Criteria to meet AQF requirements	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT801 Lead research into identifying new marketplace opportunities

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- conduct research into the trends for a specified industry sector, and identify potential business opportunities
- undertake market research and analysis, and report on the viability and related implications, of a selected business opportunity
- develop and present a feasibility report, including a cost benefit analysis that justifies the recommendations for a proposed new business initiative.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- formulate various analysis methods and tools, including:
  - affinity diagrams
  - competition matrix
  - decision trees
  - mind maps
  - risk assessment
  - strengths, weaknesses, opportunities and threats (SWOT) analysis
  - value chain
- review and outline, contract and procurement methods
- summarise possible social implications, both internal and external, to the organisation as a result of the introduction of new market opportunities
- research government and non-government governing bodies in the relevant industry

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- review legal, ethical, and security issues relating to the research of competitive business opportunities, including the laws related to patents and copyright
- outline the organisational structure, policies and procedures
- review the relevant government legislation that affects business operation.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general information and communications technology (ICT) industry, and include access to:

- appropriate resources, to allow research to be conducted into industry trends (this may include access to commercial research house libraries via a memorandum of understanding or other arrangements)
- the opportunity to conduct meaningful market research on potential business opportunities
- simulated, or real, executive-level management teams for the presentation of proposals and feedback.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT803 Endorse business plan components for a new initiative

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to endorse a business plan for a new initiative, including the marketing, operations, organisational and financial plans within a medium to large organisation.

It applies to individuals who work in high-level management positions and lead the analysis, implementation and management of emerging, and converging, information and communications technology (ICT), as they are integrated into the business process to support the organisational strategic goals of medium to large organisations.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Endorse a marketing plan for ICT business	1.1 Ensure that internal and external environmental issues are addressed 1.2 Critically review the feasibility of target market projections 1.3 Endorse the selection of advertising and promotional

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ELEMENT	PERFORMANCE CRITERIA
	strategies
2. Endorse the operation plan	2.1 Review and verify, the scope of the business operation plan 2.2 Ensure that the business plan complies with business needs 2.3 Endorse the criteria for quality processes against the organisational standards
3. Endorse the organisational plan	3.1 Critically analyse and review the organisation's structure 3.2 Ensure that the organisational structure meets the organisation's strategic plans and directions
4. Endorse the financial plan	4.1 Endorse the financial strategy for the new initiative 4.2 Evaluate the expected cash-flow projections 4.3 Critically analyse and evaluate the effects of financial decisions on the ability of the organisation to meet planned outcomes 4.4 Ensure financial risk-management procedures are followed according to organisational requirements 4.5 Ensure early detection and remedial action plans, for deviations in budget objectives and projections

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 3.1, 3.2, 4.1, 4.2, 4.3, 4.4	• Identifies, critically analyses and evaluates complex textual information, to evaluate the effectiveness of business plans
Writing	1.3, 2.3, 3.2, 4.1, 4.3, 4.4, 4.5	• Selects the document structure, language, grammar and terminology, to suit the specific subject matter and audience when evaluating, providing feedback, and endorsing business plans
Oral Communication	1.1-1.3, 2.1-2.3, 3.1-3.2, 4.1-4.5	• Obtains information by using effective listening and probing, open questioning techniques • Uses grammatical structures, specialised language, and the appropriate tone, pitch and

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		body language to achieve precise meaning, when articulating requirements and providing feedback
Numeracy	1.2, 2.1, 2.2, 3.2, 4.1, 4.2, 4.3, 4.4, 4.5	• Uses a range of statistical, mathematical and financial calculations, formulae and functions, together with appropriate software tools, to interpret numerical data relating to the market, operational and financial plans, and risk analysis
Navigate the world of work	3.2, 4.4	• Takes responsibility to respond to explicit and implicit conventions within familiar work contexts, and appreciates the importance of identifying, and responding to, protocols in new situations
Get the work done	1.1, 2.1, 2.2, 3.1, 4.3, 4.4, 4.5	• Recognises the critical importance of clarifying, focusing and aligning goals, and expectations, and uses the process to build ownership of, and broad commitment to, achieving outcomes • Takes responsibility for high-impact decisions in complex situations involving many variables and constraints • May use formal analytical and lateral thinking techniques for identifying issues, generating and evaluating possible solutions • Demonstrates a sophisticated understanding of the principles, concepts, language and practices associated with the digital world, and endorses new technologies

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTICT803 Endorse business plan components for a new initiative	ICAICT703A Endorse business plan components for a new initiative	Updated to meet Standards for Training Packages. Recoded and minor changes to Elements and Performance Criteria to meet AQF requirements	Equivalent unit

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Links

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Assessment Requirements for ICTICT803 Endorse business plan components for a new initiative

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- verify the strategy aligning information and communications technology (ICT) services with organisational goals
- direct a critical risk analysis, including security, for ICT assets
- verify that the risk assessment procedures are implemented
- verify that the contingency plans for business continuity are established
- evaluate the warning systems, and direct an ongoing process that includes regular or programmed reviews of the risk profile
- verify that security products are being utilised
- verify organisational security policy is being implemented
- direct the development of a strategy to ensure that quality expectations are being met
- endorse the main components of the business plan.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- research and summarise, risk management principles and guidelines
- review business continuity issues for the organisation
- explore the organisation’s industry and current functionality, including the existing data and information systems
- describe the organisation's internal and external dependencies, and interdependencies
- review and summarise the organisational policies and procedures, including the risk-management strategy
- discuss past and current internal, external and industry disruptions

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- outline the relevant legislation and regulations that impact on business continuity, including:
  - workplace health and safety (WHS)
  - environment
  - duty of care
  - contracts
  - business and company law
  - freedom of information
  - industrial relations
  - privacy and confidentiality
  - due diligence
  - records management.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general ICT industry, and include access to:

- relevant strategic-level enterprise documentation, including:
  - planning
  - financial
  - ICT infrastructure documentation
- legislative policies.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT808 Direct the development of a knowledge management strategy for a business

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to evaluate existing knowledge management processes, identify barriers to capturing knowledge, and to develop new strategies.

It applies to individuals who work in senior management positions and lead the analysis, implementation and management of emerging, and converging, information and communications technology (ICT), as they are integrated into the business process to support the organisational strategic goals.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Critically analyse existing knowledge management systems	1.1 Critically evaluate the existing arrangements ,for the capture and use of business knowledge, from internal and external sources 1.2 Differentiate between knowledge management and information management systems within the organisation

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ELEMENT	PERFORMANCE CRITERIA
	1.3 Ensure that the effectiveness of existing procedures and systems is evaluated in terms of meeting the needs of clients, organisational aims, objectives and standards 1.4 Identify the need for improvements in the organisation's strategic use of knowledge
2. Evaluate the knowledge management options	2.1 Investigate the barriers to capturing knowledge within the organisation 2.2 Review evaluations and recommendations regarding the knowledge management software, with respect to its usefulness and likeliness to benefit the organisation 2.3 Review the investigations into incentives and reward systems to support knowledge management 2.4 Ensure that the required processes for maintaining an integrated knowledge management system are considered 2.5 Facilitate the development of a business case to determine the viability of selected options, and recommend a way forward for the organisation
3. Develop a knowledge-management strategy	3.1 Develop the knowledge management business strategy, in consultation with senior staff, for the capture and use of organisational knowledge 3.2 Ensure that business processes are designed to support knowledge management, according to the organisational needs and budget 3.3 Ensure that the technology requirements for the implementation of the strategy, are costed and included in the organisational budget cycle 3.4 Ensure that processes for the periodic review of knowledge management metrics within the business are in place, to maintain ongoing effectiveness and continuous improvement 3.5 Ensure that the knowledge management strategy meets the organisational requirements identified in the overall business plan, and business strategy

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

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Skill	Performance Criteria	Description
Reading	1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.3, 3.1, 3.3, 3.4, 3.5	• Identifies and reviews a wide variety of complex textual information, sourced from organisational documentation, electronic meeting places, communities of practice, the organisational knowledge bank and ICT vendors
Writing	2.5, 3.1	• Selects a formal document structure, organisational style and format, and subject-specific language, grammar and terminology, to develop organisational documentation
Oral Communication	1.1-1.4, 2.1-2.5, 3.1-3.5	• Uses effective listening and open questioning techniques, to elicit the view and opinions of others, and to obtain information • Participates in a verbal exchange of ideas and solutions, and uses detailed and clear language to clarify and present information, according to the audience • Uses the correct grammatical structures, specialised language, appropriate tone, pitch and body language, to achieve precise meaning when articulating requirements
Numeracy	1.1, 1.3, 2.1, 2.5, 3.1, 3.2, 3.3, 3.4, 3.5	• Uses a range of mathematical and financial calculations and functions, together with the appropriate software tools, to interpret and develop numerical and financial reports, relating to costing and budgets
Navigate the world of work	1.3, 3.5	• Monitors adherence to organisational policies and procedures, and considers own role in terms of a contribution to the broader goals of the work environment
Get the work done	1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.3, 2.4, 2.5, 3.3, 3.4, 3.5	• Uses a mix of intuitive and formal processes to identify key information and issues, evaluate alternative strategies, anticipate consequences and consider implementation issues, and contingencies • Takes responsibility for high-impact decisions in complex situations involving many variables and constraints • May use formal analytical and lateral thinking techniques for identifying issues, generating and evaluating possible solutions • Plays with possibilities as an integral part of work, identifying principles, concepts and

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		features of new perspectives and ideas • Considers the strategic and operational potential of digital trends to achieve work goals, enhance work processes, create opportunities and reduce risks

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTICT808 Direct the development of a knowledge management strategy for a business	ICAICT708A Direct the development of a knowledge management strategy for a business	Updated to meet Standards for Training Packages. Recoded and minor changes to Performance Criteria to meet AQF requirements	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT808 Direct the development of a knowledge management strategy for a business

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- critically analyse and document, the effectiveness of existing knowledge management systems
- research the knowledge management options in the marketplace
- recommend an approach that meets the organisational needs
- develop a knowledge management strategy.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- summarise management concepts, processes and trends
- review and interpret relevant organisational policies, and legislation, that affect business operations
- research and summarise, both internal and external sources of information
- recognise the legal, ethical and security issues relating to knowledge management
- explain organisational change-management theory and methods
- discuss records management and database-management principles as they relate to knowledge management, particularly metadata.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general information and communications technology industry (ICT), and include access to:

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- a workplace of sufficient complexity, to enable the required level of analysis to be carried out in relation to:
  - current business processes
  - existing knowledge management systems
  - the organisational culture
- relevant enterprise strategic documentation, including:
  - strategic planning
  - financial
  - ICT infrastructure
- organisational objectives and policies.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT809 Facilitate business analysis

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to direct internal and external information and communications technology (ICT) services within a medium to large organisation.

It applies to individuals who work in high-level management positions in medium to large organisations and direct the strategic planning, risk management, and security of the internal and external ICT infrastructure of their organisation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Facilitate the elicitation of stakeholder business requirements for enhancements	1.1 Review the business requirements documentation, and ensure that it is complete and according to enterprise standards 1.2 Ensure that the proposed project benefits align with strategic directions 1.3 Determine the scope, complexity, deliverables, and time lines of the business process enhancements to be undertaken

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ELEMENT	PERFORMANCE CRITERIA
2. Prioritise the enhancements that add value to business operations	2.1 Research the business operations necessary to analyse the business domain 2.2 Negotiate the requirements definition with stakeholders 2.3 Develop a process for addressing change requests in a dynamic environment
3. Provide the interface between technical and business stakeholders	3.1 Facilitate the selection of a modelling tool for a business system 3.2 Facilitate the selection of information-gathering tools 3.3 Ensure that the requirements-analysis content addresses the project objectives 3.4 Participate in the development of a technical specification

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 1.3, 3.1, 3.2, 3.3, 3.4	• Identifies, analyses and evaluates complex textual information, to obtain information relevant to enterprise resource planning and management
Writing	2.3, 3.4	• Integrates information and ideas from a number of sources, utilising appropriate ICT modelling tools, specialised and cohesive language, and document structures, to meet the varied requirements of the enterprise and stakeholders
Oral Communication	1.1, 1.2, 1.3, 2.1, 2.2, 3.1, 3.2, 3.3, 3.4	• Elicits the view and opinions of others, and obtains information by listening and questioning • Participates in a verbal exchange of ideas/solutions, and uses detailed and clear language, to clarify and present information, according to the requirements and audience • Articulates requirements and strategies clearly, using the appropriate tone, style, body language, and reflective responses, to build business relationships

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Numeracy	1.1, 1.2, 1.3, 3.4	• Uses a range of statistical and financial calculations and functions, to interpret and compile data relating to market analysis and budgetary requirements
Navigate the world of work	1.2	• Takes full responsibility for considering own role in terms of a contribution to the broader goals of the work environment
Get the work done	1.1, 1.2, 1.3, 2.1, 2.3, 3.1, 3.2, 3.4	• Develops flexible plans for complex, high-impact activities with strategic implications • Takes responsibility for high-impact decisions in complex situations, involving many variables and constraints • Keeps abreast of innovations and good practice beyond own context, borrowing, adapting, combining and redesigning for own purposes, or using as a provocation, to rethink current approaches • Demonstrates a sophisticated understanding of the principles, concepts, language and practices associated with the digital world, and uses these to troubleshoot, and understands the uses and potential of new technologies

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTICT809 Facilitate business analysis	ICAICT709A Facilitate business analysis	Updated to meet Standards for Training Packages. Recoded and minor changes to Performance Criteria to meet AQF requirements	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT809 Facilitate business analysis

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- facilitate a strategy to align information and communications technology (ICT) services, with the organisational goals
- lead the development of a strategy for risk assessment, including security for ICT assets, and ensure that the measures required to mitigate risk are applied
- produce contingency plans for business continuity
- ensure warning systems, and an ongoing process that includes regular or programmed reviews of the risk profile
- lead the development of a strategy for the implementation of the appropriate processes and procedures, to ensure that quality expectations are met.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- summarise AS/NZS ISO 31000:2009 "risk management requirements"
- explain application of security products
- review business continuity issues for the organisation
- review the organisation’s industry and current functionality, including the existing data and information systems
- review the organisation's internal and external dependencies, and interdependencies
- outline the organisational policies and procedures, including the risk management strategy
- review and outline documented industry disruptions.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general ICT industry, and include access to:

- relevant strategic level enterprise documentation, including:
  - planning
  - financial
  - ICT infrastructure
- standards, codes of practice, legislation and regulations.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT811 Manage an information architecture project

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge to develop and test an information architecture prototype that meets organisational requirements.

It applies to individuals who work in high-level management positions and lead the analysis, implementation and management of emerging, and converging, information and communications technology (ICT) as they are integrated into the business process to support organisational strategic goals.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Define the content needs	1.1 Research the strategic intent of the website, or system, from the business requirements and client expectations 1.2 Provide direction in order to develop the information requirements, based on the business and client requirements 1.3 Synthesise the required information, and group it into business schemes related to the business structure 1.4 Direct the determination of content requirements for each

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ELEMENT	PERFORMANCE CRITERIA
	process
2. Contribute to the description of the system and transmission media	2.1 Consult with network and system specialists 2.2 Critically analyse the features of the physical environment, to interface with the information system architecture 2.3 Estimate the traffic content and volumes, based on the business requirements
3. Supervise the development of content structure and navigation plan	3.1 Organise the information into related topics 3.2 Ensure that the information hierarchy is in a valid sequence 3.3 Provide direction for clear, valid and intuitive labelling 3.4 Review and commit to the feasibility of architecture design 3.5 Develop the acceptance criteria
4. Implement the navigation system development	4.1 Coordinate the fit of navigational systems with the business requirements 4.2 Supervise the development of navigational search subsystems 4.3 Lead the development of consistent, and logical, labelling systems
5. Finalise the testing and accept the information architecture model	5.1 Lead the construction of an information architecture prototype 5.2 Ensure that a broad sample of business clients are engaged 5.3 Ensure that the site content meets the business needs 5.4 Lead the testing of the information architecture prototype, to test that it operates on the chosen system, and transmission media 5.5 Supervise the user-acceptance test

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description

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Reading	1.1, 1.3, 1.4, 2.2, 2.3, 3.1, 3.2, 3.4, 4.1, 5.3, 5.4	• Organises, evaluates and critiques ideas, and information, from a wide range of complex texts • Draws on a broad range of strategies, to build and maintain understanding throughout complex texts
Writing	1.2, 1.3, 2.3, 3.2, 3.3, 3.5	• Selects the structure, language, grammar and terminology to suit the specific subject matter and audience, in order to develop a wide variety of documentation and directions, including direction for the content requirements, information hierarchy, navigational search subsystems, labelling systems and user-acceptance test
Oral Communication	1.1-1.4, 2.1, 3.3, 3.4, 4.1, 4.2, 4.3, 5.1, 5.4, 5.5	• Uses effective listening and probing, open questioning techniques to elicit the view and opinions of others, and to obtain information • Employs plain English to convey complex and abstract concepts, and information • Articulates requirements and strategies clearly, in a courteous manner, using the appropriate pitch, tone, body language and reflective responses
Navigate the world of work	1.1, 1.2, 1.3, 2.3, 3.3	• Takes a lead role in the development of organisational goals, roles and responsibilities
Get the work done	1.1, 1.3, 1.4, 2.2, 3.1, 3.2, 3.4, 4.1, 4.2, 4.3, 5.1, 5.4	• Develops flexible plans for complex, high-impact activities with strategic implications • Takes responsibility for high-impact decisions in complex situations, involving many variables and constraints • Keeps abreast of innovations and good practice beyond own context, borrowing, adapting, combining and redesigning for own purposes, or using as a provocation to rethink current approaches • Demonstrates a sophisticated understanding of the principles, concepts, language and practices associated with the digital world, and uses these to troubleshoot, and understands the uses and potential of new technologies

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Unit Mapping Information

Code and title **current version**	**Code and title** **previous version**	**Comments**	**Equivalence status**
ICTICT811 Manage an information architecture project	ICAICT711A Manage an information architecture project	Updated to meet Standards for Training Packages. Recoded and minor changes to Performance Criteria to meet AQF requirements	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT811 Manage an information architecture project

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- identify the strategic and business intent of the website or system
- conduct business meetings, applying effective communication techniques
- research and determine the essential requirements of a product, applying quality management principles
- describe the features of the website or system
- develop the navigation system
- construct an information architecture prototype
- test the prototype with the operating system and the transition media
- supervise the user acceptance test.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- examine the equity and diversity principles relevant to information architecture projects
- research and critique organisational policies and procedures, as they apply to the project
- determine and outline the public sector legislation, codes of practice and other formal agreements, that directly impact on the business operations
- evaluate the components of telecommunications networks
- research and synthesise the workplace, and industry environment, as it applies to information architecture.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general information and communications technology (ICT) industry, and include access to:

- the computer system and a web-host workplace

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT812 Develop a business intelligence framework

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge to evaluate the business intelligence (BI) requirements of an organisation, and to select the correct methodologies to develop a BI solution.

It applies to individuals who work in high-level management positions and lead the analysis, implementation and management of emerging, and converging, information and communications technology (ICT) as they are integrated into the business process, to support the organisational strategic goals of medium to large organisations.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Elicit the business intelligence requirements	1.1 Articulate the benefits of business intelligence 1.2 Select the appropriate system development methodology, through the analysis of a range of options 1.3 Critically evaluate the impact of business intelligence on the enterprise

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Select the appropriate business model for a data repository 1.5 Adopt a metadata standard for the enterprise 1.6 Establish the appropriate data analysis techniques
2. Direct the business intelligence data manipulation	2.1 Identify the data sources and scope 2.2 Evaluate and endorse the selected data-manipulation methods 2.3 Critically review, and commit to, the feasibility of the architecture design 2.4 Develop the acceptance criteria 2.5 Endorse the selected data-modelling techniques and processes 2.6 Endorse a load balancing algorithm for optimum processing 2.7 Sign off the design specifications
3. Endorse the business intelligence solution architecture	3.1 Ensure that the data-warehousing management techniques and processes are according to the specifications 3.2 Lead the scoping of logical data models 3.3 Supervise the selection of middleware tools 3.4 Critically review, and commit to, a searchable data repository solution
4. Finalise the testing and accept the framework	4.1 Finalise the physical data model 4.2 Complete testing of the overall model 4.3 Test the security 4.4 Test the integrity 4.5 Perform a user-acceptance test

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.2, 1.3, 1.6, 2.1, 2.3,	• Organises, evaluates and critiques ideas, and information, from a wide range of complex

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	2.5, 2.6, 2.7, 3.1, 3.2, 3.3, 3.4, 4.1	texts • Draws on a broad range of strategies to build and maintain understanding throughout complex texts
Writing	1.1, 1.3, 1.6, 2.4, 2.7, 4.1, 4.5	• Integrates information and ideas from a number of sources, utilising the appropriate BI software tools, specialised and cohesive language, and appropriate document structures, to meet the varied requirements of the organisation and the task
Oral Communication	1.1, 2.1, 2.2, 2.3, 2.5, 2.6, 3.2, 3.3, 3.4, 4.5	• Elicits information and ideas using plain English, translating BI specific terminology when necessary, and using effective listening and questioning techniques • Uses specific and complex BI terminology, to liaise with team members, review and endorse methodology and monitor the project • Articulates the requirements and methodologies clearly, using the appropriate tone, style, body language and reflective responses
Numeracy	1.1, 1.3, 1.4, 1.6, 2.3, 2.4, 2.5, 2.6, 2.7, 3.2, 3.4, 4.1, 4.2, 4.5	• Uses a range of complex statistical, mathematical and financial calculations, formulae and functions together with the appropriate BI software tools, in the development of a BI framework
Get the work done	1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 3.2, 3.3, 4.2, 4.3, 4.5	• Demonstrates a sophisticated understanding of the principles, concepts, language and practices associated with the digital world, and uses these to develop a BI framework • Recognises the critical importance of clarifying, focusing and aligning goals, and expectations, using the process to build ownership of, and broad commitment to, achieving outcomes • Takes responsibility for high-impact decision in complex situations, involving many variables and constraints

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**

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Code and title **current version**	**Code and title** **previous version**	**Comments**	**Equivalence status**
ICTICT812 Develop a business intelligence framework	ICAICT712A Develop a business intelligence framework	Updated to meet Standards for Training Packages. Recoded and minor changes to Performance Criteria to meet AQF requirements	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT812 Develop a business intelligence framework

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- research and critically analyse the business intelligence requirements
- review, analyse and direct, business intelligence data manipulation
- review, critically analyse and endorse, the proposed business intelligence solution architecture
- initiate and contrast the tests required for the intelligence framework, for final acceptance.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- evaluate the application of system development methodologies and other technical considerations including:
  - managing and using metadata
  - data modelling
  - data warehousing/back-end software alternatives
  - business analytics
  - business intelligence tools
- analyse the organisational policies and procedures, as they apply to the business intelligence frameworks
- discuss behaviour theories as they apply to business intelligence, including:
  - responsibility and achievement
  - affiliation management
  - motivation
- appraise and evaluate, the business intelligence (BI) procedures

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- interpret the workplace and industry environmental conditions, as they apply to business intelligence.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general information and communications technology (ICT) industry, and include access to:

- a business intelligence focus
- relevant enterprise documentation, including human resource (HR) and quality management policies.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT813 Manage ICT services

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to apply the principles of service quality management and to develop a code of practice for information and communications technology (ICT) service management.

It applies to individuals who work in senior management positions and manage a wide range of ICT projects, and lead the analysis, implementation and management of emerging, and converging, ICTs as they are integrated into the business process to support organisational strategic goals.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to manage ICT services	1.1 Identify the quality requirement principles to provide ICT service provision, according to the business needs and expectations 1.2 Research and critically analyse, the appropriate service processes 1.3 Analyse continual improvement processes, to align and

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ELEMENT	PERFORMANCE CRITERIA
	realign, the ICT services to business needs
2. Develop the quality requirements for ICT service management	2.1 Identify the specific quality requirements to improve the service management processes 2.2 Align ICT services with the business, applying service management concepts 2.3 Develop the strategies for the control, delivery and support of ICT services
3. Develop a code of practice for ICT service management	3.1 Research and critically analyse, best practice processes 3.2 Document best practice processes for ICT service management 3.3 Implement the identified best practice processes 3.4 Evaluate, monitor and improve ICT service management

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 1.3, 2.1, 3.1, 3.4	• Identifies, analyses and critically evaluates, complex online and hard copy documentation containing service-management and technology-specific terminology, in order to research, develop, monitor and improve, a quality service management process
Writing	2.2, 2.3, 3.2, 3.4	• Uses plain English, the appropriate grammatical structures and terminology, diagrams and flow charts, and the formatting, and document structure, relevant to the subject matter and audience, to develop strategies and best practice processes
Oral Communication	1.1-1.3, 2.1-2.3, 3.1, 3.3, 3.4	• Expresses research and resource requirements clearly, and directs discussions to elicit information, and the views and opinions of others, by using effective listening and open, questioning techniques • Articulates requirements and methodologies clearly, using the appropriate tone, style, body language and reflective responses
Get the work	1.1-1.3, 2.1-2.3,	• Considers the strategic and operational potential of

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done	3.1, 3.4	digital technology to achieve work goals, enhance work processes, create opportunities and reduce risks • Draws on a broad understanding of the context and uses a combination of analysis and intuition, to decide whether an idea is worth developing and implementing • Develops plans for complex high-impact activities with strategic implications • Recognises and addresses complex problems involving multiple variables

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTICT813 Manage ICT services	ICAICT713A Manage IT services	Updated to meet Standards for Training Packages. Minor edit to title. Recoded and minor changes to Performance Criteria to meet AQF requirements.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT813 Manage ICT services

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- research and critically analyse the provision of quality information and communications technology (ICT) services
- review, then develop and implement, procedures and processes to improve the quality of ICT service management
- critically review, evaluate, monitor and improve the ICT service management.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- review and appraise ICT service management concepts and processes
- research and critically review, the quality assurance procedures in ICT services
- discriminate and summarise, industry best practice processes in ICT services
- summarise and contrast, the technical terminology relevant to service management.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general ICT industry, and include access to:

- a current service organisational chart
- current service logs and procedures
- an organisational mission statement.

Assessors must satisfy NVR/AQTF assessor requirements.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT814 Develop cloud computing strategies for a business

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to develop a cloud computing strategy for establishing cloud computing services as a key business enabler.

It applies to senior management, including strategic business analysts and chief information officers.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Analyse the existing business ICT system assets	1.1 Review the business assets and identify the most appropriate for possible cloud deployment 1.2 Evaluate each asset's risk tolerance to the business, for possible cloud deployment
2. Select the most suitable deployment and/or delivery model for each asset	2.1 Map each asset to potential cloud deployment models 2.2 Review and select the most relevant delivery model for each asset 2.3 Document the security risks to the business as a result of

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ELEMENT	PERFORMANCE CRITERIA
	using the identified deployment and delivery models
3. Develop a cloud implementation strategy	3.1 Develop a cloud implementation plan, incorporating the most appropriate deployment and delivery models, in line with the enterprise requirements 3.2 Develop a costing for the technology requirements of the implementation proposal 3.3 Develop processes for the periodic review of the cloud service metrics, associated with the implementation proposal

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 2.2	• Organises, evaluates and critiques ideas and information from a range of complex texts
Writing	2.1, 2.3, 3.1	• Prepares documentation expressing ideas, explores complex issues and is constructed logically, succinctly and accurately
Numeracy	3.2	• Analyses and synthesises highly embedded mathematical information in a broad range of tasks and texts
Navigate the world of work	3.1	• Develops and implements strategies that ensures that the organisational policies, procedures and regulatory requirements are being met
Get the work done	3.1, 3.3	• Plans strategic priorities and outcomes within a flexible, efficient and effective context, in a diverse environment exposed to competing demands • Identifies the key factors that impact on decisions and their outcomes, drawing on experience, competing priorities, and decision-making strategies, where appropriate • Uses digital technologies to manage business operations and actively investigates new technologies, for strategic and operational purposes

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Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTICT814 Develop cloud computing strategies for a business	ICAICT814A Develop cloud computing strategies for a business	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT814 Develop cloud computing strategies for a business

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- analyse and document, the effectiveness of existing cloud computing deployment and delivery models
- research the cloud computing options in the marketplace
- develop a cloud computing implementation strategy that meets the enterprise needs.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- research and synthesise information to determine and document current business processes, and cloud service sources
- define and employ coaching, mentoring and teamwork skills to ensure the support of cloud computing strategies as an ongoing initiative
- investigate and analyse cloud computing concepts, processes and trends
- synthesise the relevant enterprise policies and legislation that affect business operations, specifically privacy legislation
- discriminate between the legal, ethical and security issues relating to cloud computing
- evaluate organisational change-management theory and methods
- determine the risk tolerance issues, as they relate to the development of cloud computing strategies
- investigate and critically analyse, the methods of deploying cloud technology strategies
- investigate and critically analyse, the security issues relevant to a business.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the general information and communications technology (ICT) industry, and include access to:

- a workplace of sufficient complexity, to enable the required level of analysis to be carried out in relation to current business processes, and possible future cloud computing solutions
- relevant enterprise strategic documentation, including:
  - strategic planning
  - financial
  - ICT infrastructure
- enterprise objectives and policies.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT815 Manage automated ICT system applications using enterprise wide operating system

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the performance outcomes, skills and knowledge required to apply the enterprise wide operating system to system automation in a distributed computing environment as used in telecommunications applications.

It applies to telecommunication engineers who manage automated systems within a telecommunications network including databases, files systems and user administration.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

General ICT

Elements and Performance Criteria

Elements *Elements describe the essential outcomes.*	**Performance Criteria** *Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Operate an enterprise wide operating system	1.1 Modify boot options by operating an enterprise wide operating system 1.2 Shutdown a networked operating system using system commands with qualifiers 1.3 Manage files using file management commands and wildcards and creating disk partitions and other media file systems

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	1.4 Mount and unmount file systems using system commands 1.5 Verify the integrity of file systems using system utilities 1.6 Configure telecommunication applications by using system commands with special permission modes 1.7 Critically analyse, evaluate and apply the enterprise wide operating system features to a given telecommunications multi-user application using distributed computing
2. Apply system functions	2.1 Use the command line interface to interact with shells and commands to the telecommunications application on distributed computing 2.2 Manage files by applying regular expressions with system functions 2.3 Send text files and output streams through text utilities using commands 2.4 Evaluate and apply enterprise wide operating system functions to a telecommunications application on distributed computing to create menu options
3. Manage user login environment and customisation	3.1 Manage user and group accounts to the telecommunications application on distributed computing 3.2 Change user and group profiles to allowed security access level using commands 3.3 Scan log files for activity using commands 3.4 Configure the user environment for setting user and global profiles 3.5 Record the configuration settings
4. Manage system level functions	4.1 Automate scheduling using the system ‘cron’ command 4.2 Critically analyse the need for backup strategy in a telecommunications network application 4.3 Plan a backup strategy to maintain redundancy of the system 4.4 Configure the system to perform scheduled backing up the file system to various media 4.5 Verify integrity of backup operations by restoring system using backup files 4.6 Configure system log files for administration and security needs 4.7 Manage a print server and print files to provide customer service

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	4.8 Document the configuration backup schedules and system logs
5. Complete evaluation and configuration documentation	5.1 Produce a project evaluation report on the application of Unix features to a given telecommunications multi-user application using distributed computing with recommendations on improvements to the system 5.2 Produce a report on the management and configuration of user applications and system level functions

Foundation Skills

This section describes language, literacy and numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.7, 2.4, 3.3, 4.2	• Evaluates and critiques ideas and information from a range of complex texts
Writing	2.4, 3.5, 4.2, 4.8, 5.1, 5.2	• Generates complex written texts demonstrating sophisticated writing skills
Oral Communication	4.2, 5.1, 5.2	• Presents complex and effective spoken communication in a broad range of contexts
Numeracy	1.6, 3.4, 3.5, 4.2, 4.4, 4.6	• Applies a wide range of highly developed mathematical and problem solving strategies and techniques to a wide range of contexts
Get the work done	1.1-1.7, 2.1-2.4, 3.1-3.4, 4.1-4.7, 5.2	• Plans strategic priorities and outcomes within a flexible, efficient and effective context in a diverse environment exposed to competing demands • Makes high impact decisions in a complex and diverse environment, using input from a range of sources • Identifies key factors that impact on decisions and their outcomes, drawing on experience, competing priorities, and decision making strategies where appropriate • Explores and incubates new and innovative ideas through unconstrained analysis and critical thinking to develop and improve the organisations goals • Uses digital technologies to manage business operations and actively investigates new

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		technologies for strategic and operational purposes

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalent status**
ICTICT815 Manage automated ICT system applications using enterprise wide operating system	ICTITU7106B Manage automated ICT system applications using Unix	Updated to meet Standards for Training Packages. Recoded and minor changes to PC's to meet AQF requirements	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT815 Manage automated ICT system applications using enterprise wide operating system

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- manage ICT system functions using a enterprise wide operating system
- analyse system functions based on data
- produce a report on the evaluation of the system
- document recommendations for improvement

Knowledge Evidence

Evidence of the ability to:

- analyse an automated systems
- critique communication and multi user telecommunications systems
- appraise distributed computing
- appraise encoding and programming techniques
- analyse and report on network security
- describe networking infrastructure
- describe realisation of software simulation
- apply enterprise wide operating system commands.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications -Information Technology field of work and include access to:

- a telecommunications operations site
- unix based system to manage automated functions
- special purpose tools, equipment, materials
- industry software packages.

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Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTICT516 Test telecommunications network using virtual instruments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to apply simulation testing techniques to telecommunication systems.

It applies to technical staff who work with optical communication systems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – IT Use

Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan simulation of hardware instruments	1.1 Arrange access to site according to required procedure 1.2 Determine specific applications for virtual instruments in telecommunication systems 1.3 Determine features of virtual instruments applicable to telecommunication systems, including limitations of virtual instruments 1.4 Select a range of simple and complex virtual instruments applicable to

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	telecommunication systems
2. Perform simulation techniques	2.1 Perform measurements on telecommunication systems using simple virtual instruments 2.2 Simulate and display properties of a modulated signal with software generated instruments following enterprise work health and safety (WHS) processes and procedures 2.3 Simulate and display a data signal transmitted through a band-limited channel 2.4 Control virtual instruments using data bus operation
3. Analyse simulation measurements	3.1 Determine conversion processes used in virtual instruments 3.2 Document potential effect of a simulation algorithm on readings taken 3.3 Analyse measurements in context of conversion process and simulation algorithm
4. Report measurement results	4.1 Prepare report on measurement results 4.2 Submit report to supervisor

Foundation Skills

This section describes language, literacy and numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1, 1.2, 1.3, 3.3	• Draws on a range of strategies to research and understand complex texts • Analyses and consolidates test results and data from a range of sources, against defined criteria and requirements
Writing	1.1, 3.2, 4.1, 4.2	• Demonstrates sophisticated writing skills by selecting appropriate conventions and stylistic devices to express precise meaning
Oral Communication	1.1, 4.2	• Establishes effective spoken communication in a range of contexts
Numeracy	1.3, 2.1-2.4, 3.1-3.3, 4.1	• Selects and applies a wide range of mathematical and problem solving techniques in a broad range of contexts • Uses a wide range of formal mathematical language and representation to communicate mathematically

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Navigate the world of work	1.1, 2.2	• Takes full responsibility for following policies, procedures and legislative requirements and identifies organisational implications of new legislation or regulation
Get the work done	1.1-1.4, 2.1-2.4, 3.1, 3.3	• Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others, taking into account capabilities, efficiencies and effectiveness • Applies systematic and analytical decision-making processes for complex and non-routine situations • Responds intuitively to problems requiring immediate resolution, drawing on past experiences to focus on the cause • Uses and investigates new digital technologies and applications for testing, managing and manipulating data and communications effectively, in a secure and stable digital environment

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTITU516 Test telecommunications network using virtual instruments	ICTITU5144A Test telecommunications network using virtual instruments	Updated to meet standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTICT516 Test telecommunications network using virtual instruments

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- interpret and use equipment and system manuals and specifications
- use latest virtual instrument test equipment
- simulate signals and systems using complex virtual instruments
- analyse and report on results of simulation.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe the applications of virtual instruments
- explain current and emerging developments in relation to virtual instruments
- describe instrumentation principles and practices
- identify internet support services
- outline modulation methods, AM, FM and digital formats
- name sampling and data conversion processes
- explain virtual instrument features and benefits.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications – Information Technology use field of work and include access to:

- internet sites

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- electronic workbench or similar software
- virtual instrument applications and media
- a workplace conducting operations involving virtual instruments, with support from a competent supervisor or mentor
- telecommunications equipment suitable for integrating projects
- industry software packages (where applicable).

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNPL401 Apply business acumen to network planning

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to consider business drivers in a decision-making process for network planning and investment. It prepares individuals for entry into planning and design for network additions and implementations to accommodate network growth and new technologies within the industry.

It applies to individuals with a range of telecommunications skills and extensive knowledge of core and access network capabilities of the service provider.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Network Planning

Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Analyse forecasts using customer demand	1.1 Gather and organise information concerning customer service and usage data to determine customer demand 1.2 Determine trends in customer demands in specific customer operating environments and markets 1.3 Assess key measures of capacity and customer demand for forecast

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2. Build models to develop business cases	2.1 Construct a model to represent key options to formulate strategic proposals in network planning 2.2 Determine rights of carriers and service providers in installing facilities under Commonwealth legislation 2.3 Produce a strategic network plan using key variables, and communicate them to intended audience 2.4 Apply business case methodology to determine key economic measures and risks to business success 2.5 Evaluate business value and options to recommend appropriate planning strategy
3. Apply financial analysis	3.1 Use a financial investment tool relevant to the business environment to determine financial viability of the planning project 3.2 Apply key economic measures in an analysis process and develop business strategy 3.3 Determine relevant level of financial analysis required to optimise network planning
4. Analyse demographic trends for strategy development	4.1 Gather demographic data and determine impact of demographic diversity on planning strategies 4.2 Analyse data and produce demographic trends for use in strategy developments in network planning
5. Assess technology implementation	5.1 Determine unit costs associated with technologies and products by using lifecycle of technologies 5.2 Research what different technology bases can deliver and circumstances and locations in which they should be successfully deployed
6. Evaluate network deployment architecture	6.1 Evaluate network deployment architecture using network deployment rules and reasoning behind architecture rules 6.2 Produce a business model of network planning, applying commercial considerations and exemption process

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description

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Reading	1.1, 2.2, 2.5, 4.1, 5.2, 6.1	• Identifies and evaluates text to determine key information and specific requirements and responsibilities
Writing	1.2, 2.1, 2.3, 2.4, 3.1, 3.2, 6.2	• Develops material for a specific audience using clear and detailed language • Uses expected forms and conventions to present required information
Oral Communication	2.3	• Articulates specific information using an appropriate tone and vocabulary for intended audience
Numeracy	1.1-1.3, 2.1, 2.4, 3.1-3.3, 4.1, 4.2, 5.1, 6.1, 6.2	• Interprets numerical information and applies mathematical calculations relating to time durations and financial consequences • Applies different financial models to the planning process and highlights benefits and drawbacks of different strategies
Navigate the world of work	2.2	• Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements
Interact with others	2.3	• Uses a range of strategies to establish a sense of connection and build rapport with clients and co-workers • Selects and uses appropriate conventions and protocols when communicating with clients and co-workers in a range of work contexts
Get the work done	1.1-1.3, 2.1, 2.2, 2.4, 2.5, 3.1-3.3, 4.1, 4.2, 5.2, 6.1, 6.2	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes • Makes routine decisions and implements standard procedures for routine tasks, using formal decision-making processes for more complex and non-routine situations • Addresses less predictable problems and initiates standard procedures in response, applying problem-solving processes in determining a solution

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**

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Code and title current version	Code and title previous version	Comments	Equivalence status
ICTNPL401 Apply business acumen to network planning	ICTNPL4107A Apply business acumen to network planning	Updated to meet standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNPL401 Apply business acumen to network planning

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- analyse forecasts using customer demand
- build accurate models to develop business cases, applying financial analysis
- analyse demographic trends for strategy development
- assess technology implementation
- communicate with customers
- evaluate network deployment architecture.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain different forms of business modelling
- identify commercial considerations, including:
  - capital expenditure (CAPEX)
  - operational expenditure (OPEX)
  - product revenue and demand versus network cost
  - return on investment (RoI)
  - time to market
- identify role of demographics in the planning process
- outline emerging technologies of telecommunications
- identify financial investment tools:
  - cost-benefit analysis
  - investment management system

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  - net present value (NPV)
- identify financial models
- explain forecasting of trends
- identify and explain relevant legislation as it applies to:
  - Australian competition and consumer affairs
  - telecommunications industry regulatory accounting
  - universal services obligations
- describe network planning processes.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications – Network Planning field of work and include access to:

- network planning data
- relevant databases
- business and financial models
- systems and deployment rules and relevant legislation
- planning processes and regulatory frameworks.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNPL402 Plan the deployment of access network architectures

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to plan deployment of network architecture when conducting access network telecommunications work.

It applies to individuals with a range of telecommunications skills and extensive knowledge of core and access network capabilities of the service provider. It prepares individuals for entry into planning and design for network additions and implementations to accommodate network growth and new technologies within the industry.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Network Planning

Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Scope the project	1.1 Prepare for work according to site specific safety requirements and enterprise work health and safety (WHS) processes and procedures 1.2 Determine type of access network by accessing and using network information sources 1.3 Produce a brief on how access network architecture components relate to the larger network and their impact on the work

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	1.4 Evaluate equipment type and technologies to be considered, to determine availability and compatibility with existing network equipment 1.5 Obtain resources and equipment needed for the work according to enterprise procedures and check for correct operation and safety 1.6 Assess capacity limitations of various platforms in the context of the work to ensure maximum network performance 1.7 Determine product capability and calculate allowable capacity of the access network to allow for network growth
2. Produce deployment plan for an Access Network	2.1 Conduct planning work using current equipment components and complying with access network deployment rules and exemption process criteria 2.2 Produce a preliminary plan on deployment of the network that maintains integrity of the access network 2.3 Discuss unexpected situations with appropriate personnel, with consideration to job specifications, safety and enterprise procedures to establish a solution 2.4 Review plan to ensure it complies with all standards and codes required when working on network access, and where appropriate make adjustments
3. Complete work and report its impact on network access	3.1 Produce final deployment plan including recommendations agreed with customer 3.2 Provide a report on network monitoring techniques used to manage the network to ensure it is performing at optimum level

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1, 1.2, 1.4-1.7, 2.1, 2.4	• Identifies and evaluates written and visual text in specialised workplace documentation to determine key information and specific requirements
Writing	1.3, 2.2, 3.2	• Develops material for a specific audience using clear and detailed language and expected forms and conventions

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Oral Communication	1.6, 1.7, 2.3, 3.1, 3.2	• Articulates specific information using an appropriate tone and vocabulary for the intended audience
Numeracy	1.6, 1.7, 3.1, 3.2	• Employs mathematical calculations to determine features and limitations of different networks
Navigate the world of work	1.1, 1.5, 2.1, 2.3, 2.4	• Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements • Identifies and acts on issues that contravene relevant policies, procedures and legal requirements
Interact with others	2.3	• Selects and uses appropriate conventions and protocols when communicating with clients and co-workers in a range of work contexts • Uses a range of strategies to establish a sense of connection and build rapport with clients and co-workers
Get the work done	1.1-1.7, 2.1, 3.1	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes • Makes routine decisions and implements standard procedures for routine tasks, using formal decision-making processes for more complex and non-routine situations • Addresses less predictable problems and initiates standard procedures in response, applying problem-solving processes in determining a solution

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNPL402 Plan the deployment of access network architectures	ICTNPL4108A Plan the deployment of access network architectures	Updated to meet standards for Training Packages	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNPL402 Plan the deployment of access network architectures

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- gather data appropriately within information sources and evaluate how the data relates to the access architecture
- source current major equipment and technologies used in an access network and detail their compatibilities
- accurately plan deployment of an access network architecture, including deployment rules, capacity and capability management and monitoring techniques
- complete work within a timeframe typically expected of the discipline, work function and industrial environment.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline the features of an access network, including:
  - architectures and geographical categorisation
  - information sources
  - technology and equipment
- define capacity and capability management
- identify capacity limitation of various platforms
- describe commercial considerations of access network deployment
- identify compatibility issues of technology and equipment
- explain currency of technology and equipment use
- summarise enterprise deployment rules and rationale

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- identify exemption process criteria
- identify major equipment components of a modern access architecture
- describe monitoring techniques to manage the access network
- outline network topologies
- identify product capability and availability allowable within an access network
- outline telecommunications access networks issues and challenges.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications – Network Planning field of work and include access to:

- network design documentation and other site-related documentation
- equipment specifications
- live network or training facilities
- organisational guidelines
- networked computers
- networked telecommunications components.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNPL403 Evaluate the capability of access networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to gather information on the types of access networks and evaluate their capability to meet present and future demands, including evaluation and comparison of competing access network technologies.

It applies to individuals with a range of telecommunications skills and extensive knowledge of core and access network capabilities of the service provider. It prepares individuals for entry into planning and design for network additions and implementations to accommodate network growth and new technologies within the industry.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Network Planning

Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Scope the project	1.1 Prepare for given work according to site-specific safety requirements and enterprise work health and safety (WHS) processes and procedures 1.2 Determine types of access networks currently deployed by accessing

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	and using network information sources 1.3 Determine nature, quantity, architecture and condition of existing network equipment and their attributes 1.4 Produce a brief on deployment scope of current access networks, including geographical limitations and their contribution to the larger network
2. Assess capability and technologies of current and future access networks	2.1 Produce layout of the topology of identified types of access networks with network elements clearly indicated 2.2 Evaluate equipment type and technologies of the access network to determine compatibility with existing network equipment and interoperability with other networks 2.3 Assess current and future capability and limitations of the network to ensure potential growth of the network 2.4 Determine future offerings of product and services outlining product offerings allowable over each network
3. Document capability evaluation	3.1 Assess capability of current access networks to deliver products and services to customers 3.2 Recommend preferred solutions for network growth with future capabilities

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1-1.4, 2.2-2.4, 3.1	• Identifies and evaluates written and visual text in specialised workplace documentation to determine key information and specific requirements
Writing	1.4, 2.1, 3.2	• Develops material for a specific audience using clear and detailed language and expected forms and conventions
Oral Communication	1.3, 1.4, 3.2	• Articulates technical information using an appropriate tone and vocabulary for intended audience
Numeracy	1.4, 2.1, 2.2	• Employs mathematical calculations to determine features and limitations of different networks and equipment

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Navigate the world of work	1.1	• Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements
Interact with others	3.2	• Selects and uses appropriate conventions and protocols when communicating with clients and co-workers in a range of work contexts
Get the work done	1.1-1.3, 2.2-2.4, 3.1, 3.2	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes • Makes routine decisions and implements standard procedures for routine tasks, using formal decision-making processes for more complex and non-routine situations • Addresses less predictable problems and initiates standard procedures in response, applying problem-solving processes in determining a solution

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNPL403 Evaluate the capability of access networks	ICTNPL4109A Evaluate the capability of access networks	Updated to meet standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNPL403 Evaluate the capability of access networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- evaluate capability and limitations of the various access network technologies for present and future needs
- determine and source equipment that will be used across the spectrum of access network technologies
- outline product offerings allowable across all competing access network technologies.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify access networks from information sources
- explain access networks in terms of:
  - common attributes and features
  - typical access network technologies and topologies
- explain how to assess capability and limitations of a network including:
  - its contribution to the boarder network; and,
  - its capacity to deliver customer products and services
- outline typical problems and challenges that arise from working with access network technologies
- explain the basis on which various network technologies are selected.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications – Network Planning field of work and include access to:

- network design documentation and other site related documentation
- equipment specifications
- live network or training facilities
- organisational guidelines
- networked computers
- networked telecommunications components.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNPL404 Evaluate the planning requirements for provisioning a telecommunications building facility

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to evaluate building service capability to meet present and future demands for a building facility housing telecommunications equipment, including gathering information and evaluating allowable types of building services, power systems, air conditioning, fire safety services, energy use and alarm systems within each technology.

It applies to individuals with a range of telecommunications skills and extensive knowledge of core and access network capabilities of the service provider. It prepares individuals for entry into planning and design for network additions and implementations to accommodate network growth and new technologies within the industry.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Network Planning

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Scope the	1.1 Prepare for given work according to relevant legislation, codes, regulations and standards including work health and safety (WHS) processes

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project	and procedures 1.2 Obtain building plans and specifications from planning section 1.3 Determine type of facility and building services required to house telecommunications network equipment and plant to efficiently support the network 1.4 Determine the purpose of the main areas or rooms in the network building and note special requirements to support safe operation of the facility 1.5 Verify who is responsible for planning, provisioning, maintaining and operation of a facility
2. Evaluate power requirements	2.1 Assess how functions of the main power and building services support network equipment and the impact if building services are not provided correctly or fail 2.2 Produce a schematic diagram of the relationship of electrical components in an end-to-end power and building services system 2.3 Assess different types of power sources likely to supply network equipment and determine benefits or deficiencies 2.4 Determine how resiliency is built into provisioning of a reliable power supply and how different levels of reliability can be achieved 2.5 Evaluate the impact of energy use and energy loads in the facility and determine how energy use can be minimised
3. Evaluate requirements of air conditioning services	3.1 Assess the main types of air conditioning components or plant available and their suitability to building requirements, and draw a schematic diagram of proposed layout 3.2 Determine how different equipment rack heat dissipation and size of a load can affect cooling needs 3.3 Evaluate how deployment of network equipment and other supporting infrastructure can affect performance and loading of the installed air conditioner
4. Evaluate requirements of fire safety services	4.1 Assess type, functions and components of fire service protection systems for fire and smoke required in a network facility for the safety and protection of people and assets 4.2 Use the building plan to locate fire systems to be deployed to comply with fire regulations 4.3 Evaluate effect equipment deployments may have on fire services and its ability to protect the site and maintain regulatory obligations

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5. Evaluate requirements of alarm systems	5.1 Determine alarm requirements from the building plan and specifications 5.2 Assess if basic monitoring is to be used with system or plant interrogation capabilities to produce an integrated alarm system for the facility 5.3 Determine where alarm systems are monitored and actioned and the personnel responsible 5.4 Evaluate what systems are used to connect power and building services output alarms, and the software requirements needed to allow interrogation
6. Produce evaluation document	6.1 Assess requirements for each building service needed to support the facility, allowing for projection of future network growth and building expansion 6.2 Produce an evaluation document on planning requirements for proposed provisioning including identified services to support the building facility

Foundation Skills

This section describes the Foundation Skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.3, 2.3, 2.4, 4.1, 4.2, 5.1-5.3, 6.1	• Identifies and evaluates complex written and visual text in specialised workplace documentation to determine key information and specific requirements
Writing	1.2, 1.5, 2.2, 3.1, 5.3, 6.1, 6.2	• Develops material for a specific audience using clear and detailed language and visuals employing expected forms and conventions
Oral Communication	1.2, 1.5, 5.3	• Articulates technical information using an appropriate tone and vocabulary for the intended audience
Numeracy	2.2-2.5, 3.1-3.3, 4.3, 5.1, 5.4, 6.1, 6.2	• Employs mathematical calculations to determine capabilities and limitations of different systems
Navigate the world of work	1.1	• Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements
Get the work done	1.1-1.5, 2.1, 2.3-2.5, 3.1-3.3, 4.1, 4.3, 5.2-5.4, 6.1	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes

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		• Makes routine decisions and implements standard procedures for routine tasks, using formal decision-making processes for more complex and non-routine situations • Addresses less predictable problems and initiates standard procedures in response, applying problem-solving processes in determining a solution

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNPL404 Evaluate the planning requirements for provisioning a telecommunications building facility	ICTNPL4110A Evaluate the planning requirements for provisioning a telecommunications building facility	Updated to meet standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNPL404 Evaluate the planning requirements for provisioning a telecommunications building facility

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- evaluate facilities used for housing network equipment and how they may be used for provisioning
- produce documentation that correctly associates responsibilities to planning, provisioning, maintenance and operation of a building facility
- evaluate planning requirements for telecommunications building facilities
- determine equipment for air conditioning systems and power supplies into building facilities
- determine requirements for energy use, alarm and fire safety services.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline these aspects of network planning:
  - alarm monitoring and hierarchy of responsibility
  - capacity of air conditioning system on a given load
  - different building services supported at a network site
- describe basic monitoring and plant interrogation capabilities
- outline complexities of various levels of alarm as applied to building facilities
- identify general types of facilities within building housing network equipment
- outline services and equipment, including:
  - types of air conditioning

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  - types of fire safety services
  - types of power sources
  - equipment deployments on fire safety services
  - main energy loads associated in a facility
- identify regulatory obligations in relation to fire safety services
- identify software systems needed to allow alarm interrogation (outputs).

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications – Network Planning field of work and include access to:

- building facilities where planning requirements for provisioning may be conducted
- relevant regulatory and organisational procedures
- documentation that impacts work.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNPL405 Develop provisioning of telecommunications building works project

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to develop provisioning of building services, including gathering information on the role of power and building services, equipment and infrastructure deployments, building standards, building services capacity and building works programs to evaluate allowable types of building services.

It applies to individuals with a range of telecommunications skills and extensive knowledge of core and access network capabilities of the service provider. It prepares individuals for entry into planning and design for network additions and implementations to accommodate network growth and new technologies within the industry.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Network Planning

Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Scope the project	1.1 Prepare for given work according to relevant legislation, codes, regulations and standards, including work health and safety (WHS)

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	processes and procedures 1.2 Determine the main role power and building services perform in a network facility and note their effect on network reliability and performance 1.3 Assess the provisioning process required to identify, plan and implement power and building services for equipment deployment plans
2. Assess equipment and infrastructure deployments	2.1 Evaluate available capacity from power and cooling plant to support the effect on floor loading, power and heat load from equipment deployments 2.2 Determine different levels of reliability performance standards applicable to specific equipment deployment needs 2.3 Develop a process to plan or implement a power and building services upgrade compatible to the network equipment requirements 2.4 Assess options available to manage capacity growth in a facility and the effect of potential single points of failure in an end-to-end power and building services system
3. Develop building works programs	3.1 Develop short- and long-term works programs for building projects that include minor upgrades to large installations 3.2 Determine triggers that may require a power and building services capacity or reliability upgrade 3.3 Prioritise projects based on customer demand and business needs
4. Assess provisioning of building services	4.1 Assess the possible effect on current and future use of a building or space when provisioning power and building services 4.2 Produce cost estimates including constraints for provisioning of a power and building services upgrade

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1-1.3	• Identifies and evaluates complex written and visual text in specialised workplace documentation to determine key information and specific requirements
Writing	1.2, 2.3, 3.1, 3.3, 4.2	• Develops material for a specific audience using clear and detailed language and visuals employing

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		expected forms and conventions
Oral Communication	1.2, 3,3	• Articulates technical information using appropriate tone and vocabulary for intended audience
Numeracy	2.1, 2.2, 2.4, 4.1, 4.2	• Employs mathematical calculations to interpret capabilities and limitations of different systems
Navigate the world of work	1.1	• Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements
Get the work done	1.1-1.3, 2.1, 2.2, 2.4, 3.1-3.3, 4.1	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes • Makes routine decisions and implements standard procedures for routine tasks, using formal decision-making processes for more complex and non-routine situations • Addresses less predictable problems and initiates standard procedures in response, applying problem-solving processes in determining a solution

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNPL405 Develop provisioning of telecommunications building works project	ICTNPL4111A Develop provisioning of telecommunications building works project	Updated to meet standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNPL405 Develop provisioning of telecommunications building works project

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- assess capacity and suitability of available power and building services for telecommunications building works
- develop a process to implement a power and building services upgrade
- develop short- and long-term works projects for equipment and infrastructure deployments
- produce accurate cost estimates for provisioning.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe the process to assess capacity and suitability of available power and building services
- outline the following features of a building works project:
  - correlation between building service systems to network equipment requirements
  - different levels of reliability performance standards, applicable to specific equipment deployment needs
  - information required to assess effect on floor loading, power and heat load from equipment deployments
  - main regulatory standards
  - role of power and building services, capacity and standards
- establish the source of budget cost estimates
- define the specific short and long term works programs

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- identify typical issues and challenges that occur in telecommunications building service systems and how these may be addressed
- outline the process for power and building services upgrades.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications – Network Planning field of work and include access to:

- building facilities where a telecommunications network project may be conducted
- relevant regulatory, organisational procedures
- documentation impacting work.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNPL406 Evaluate core network architectures

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to assess roles and evaluate benefits of competing core network architectures. Core networks use convergent internet protocol (IP) based technologies with conventional technologies.

It applies to individuals with a range of telecommunications skills and extensive knowledge of core and access network capabilities of the service provider, and prepares them for entry level planning and design for network additions and implementations to accommodate network growth and new technologies within the industry.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Network Planning

Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Evaluate basic IP network architecture	1.1 Produce a layout of the topology of an IP network showing network elements and application of the 7-layer open system interconnect (OSI) model 1.2 Determine purpose of routers and switches and use of routing protocols

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	1.3 Determine different types of generic resiliency and redundancy that can be applied in network architectures and when they should be applied 1.4 Evaluate benefits of IP networks compared to circuit-based networks and the impact on modern telecommunications networks
2. Evaluate synchronous digital hierarchy (SDH) transport architectures	2.1 Produce a layout of the topology of SDH transport networks showing structure and role of rings in the networks 2.2 Determine purpose of SDH switching and its function within the transport architecture 2.3 Assess key capacity and distance limitations in SDH networks 2.4 Assess resiliency and redundancy techniques that can be used within SDH transport networks 2.5 Evaluate compatibility of SDH transport architectures with other transport architectures
3. Evaluate broadband architectures	3.1 Produce a layout of the topology structure of the asymmetrical digital subscriber line (ADSL) edge network and the hybrid fibre coaxial (HFC) cable edge network in providing broadband access to customer 3.2 Determine purpose of point-to-point protocol (PPP) and function of the digital subscriber line access multiplexer (DSLAM), broadband remote access server (BRAS) and layer2 network protocol network server (LNS) in the ADSL network 3.3 Assess arrangement of carrier channels connecting the HFC cable customer 3.4 Determine the function of the CMTS and the purpose of DOCSIS, and key capabilities of its different versions in the HFC network 3.5 Assess resiliency considerations for ADSL and HFC cable network architectures 3.6 Evaluate benefits of providing cable broadband access to wireless broadband from a network security aspect
4. Evaluate data architectures	4.1 Produce a layout of the topology of key structures of a data network showing the IP network and multiprotocol label switching (MPLS) structures 4.2 Determine the purpose of internal and external routing protocols in an IP network outlining reasons for the creation of a virtual private network (VPN) 4.3 Determine the purpose of label distribution protocol (LDP) in an MPLS network 4.4 Assess resiliency and redundancy techniques that can be used

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	within data networks 4.5 Evaluate compatibility of IP and MPLS networking
5. Evaluate metropolitan ethernet architectures	5.1 Produce a layout of the topology structure of a metropolitan ethernet network showing optimum siting of the ethernet switch 5.2 Determine types and limitations of the varieties of ethernet transmission 5.3 Assess scaling limitations of ethernet networks 5.4 Assess resiliency and redundancy techniques that can be used within metropolitan ethernet networks 5.5 Evaluate the need for creation of virtual local area networks (VLAN) in metropolitan ethernet architecture for improved performance
6. Evaluate voice architectures	6.1 Produce a layout of the topology of a voice over internet protocol (VoIP) network and a wireless voice network showing the network elements 6.2 Determine the function of local exchange and transit exchange switches in the public switched telephone network (PSTN) 6.3 Determine the function of a secure broadband connection (SBC) and the purpose of session initiation protocol (SIP) in wireless networking 6.4 Assess resiliency and redundancy techniques that can be applied in design of voice networks 6.5 Evaluate benefits of VoIP networks compared to circuit based networks and the impact on modern telecommunications networks
7. Evaluate media and content architectures	7.1 Determine structure, elements and purpose of hosting networks in data centres and a content distribution network 7.2 Evaluate the impact of high speed broadband for wide deployment of media and content architectures
8. Prepare evaluation report	8.1 Assess compatibility and interoperability of competing core network architectures 8.2 Prepare an evaluation report outlining core network solutions using emerging technologies

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

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Skill	Performance Criteria	Description
Reading	1.2-1.4, 2.2-2.4, 3.2, 3.6, 4.2, 4.3, 4.5, 5.2, 6.2-6.5, 7.1, 8.2	• Analyses and evaluates complex written and visual text in specialised workplace documentation to determine key information and specific requirements
Writing	2.1, 4.2, 8.2	• Develops material for a specific audience using clear and detailed language and visuals employing expected forms and conventions
Oral Communication	1.2, 1.3, 2.2, 3.2, 3.4	• Articulates technical information using an appropriate tone and vocabulary for the intended audience
Numeracy	1.1, 1.4, 2.3, 2.5, 3.1, 3.4, 4.4, 5.1, 5.3-5.5, 6.1, 6.4, 6.5, 7.2, 8.1	• Employs mathematical calculations to interpret capabilities and limitations of different systems
Get the work done	1.2-1.4, 2.2-2.5, 3.2-3.6, 4.2-4.5, 5.2-5.5, 6.2-6.5, 7.1, 7.2, 8.1	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes • Makes routine decisions and implements standard procedures for routine tasks, using formal decision-making processes for more complex and non-routine situations • Addresses less predictable problems and initiates standard procedures in response, applying problem-solving processes in determining a solution

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTNPL406 Evaluate core network architectures	ICTNPL4112A Evaluate core network architectures	Updated to meet standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNPL406 Evaluate core network architectures

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- determine first three layers of the open system interconnect (OSI) model
- determine the role of switches and routers in the core network and different types of routing protocols
- evaluate synchronous digital hierarchy (SDH) switching and transmission and its ability to create resiliency in the network through various redundant configurations
- evaluate benefits, purpose and structure of ADSL networks and other broadband products
- determine and compare data networks with specific reference to internet protocol (IP) and multiprotocol label switching (MPLS)
- evaluate the most important routing protocols of internal and external MPLS and the resilience built into them
- evaluate limitations of an ethernet network and how VLAN can be incorporated in them
- compare various voice protocols
- determine the purpose of various hosting in data centres and media and distribution platforms.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline the following features of core network architectures:
  - client business domain, business function and organisation
  - networking technologies
  - theoretical concepts of three or more current industry network development and design methodologies

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  - transmission technologies and protocols
- outline MPLS and IP architectures across a core network environment
- outline current industry-accepted hardware and software products
- identify and describe relevant protocols, such as routing information protocol (RIP), enhanced interior gateway routing protocol (EIGRP), open shortest path first (OSPF), and border gateway protocol (BGP) operations
- identify VLANs and VPN tunnels and describe how they may be implemented in an ethernet/MPLS environment.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications – Network Planning field of work and include access to:

- network design documentation
- site-related documentation
- equipment specifications
- live network or training facilities
- organisational guidelines
- networked computers
- networked telecommunications components.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNPL407 Plan the deployment of core network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to plan deployment of core network for a telecommunications service provider, including use and consideration of core network deployment data, technology, equipment, capacity management and network management information sources. Core networks use convergent internet protocol (IP) based technologies with conventional technologies.

It applies to individuals with a range of telecommunications skills and extensive knowledge of core and access network capabilities of the service provider. It prepares individuals for entry into planning and design for network additions and implementations to accommodate network growth and new technologies within the industry.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Network planning

Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Scope the project	1.1 Prepare for work according to site-specific safety requirements and enterprise work health and safety (WHS) processes and procedures 1.2 Determine the type of core network by accessing and using network

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	information sources 1.3 Produce a brief showing how core network architecture components relate to the larger network and their impact on the work 1.4 Evaluate equipment type and technologies to be considered to determine availability and compatibility with existing network equipment 1.5 Obtain resources and equipment needed for the work according to enterprise procedures and check for correct operation and safety 1.6 Assess capacity limitation of platforms in context of the work to ensure maximum network performance 1.7 Determine product capability and calculate allowable capacity of the core network to allow for network growth
2. Produce deployment plan for a core network	2.1 Assess demand for the core network using key geographic, demographic, forecast and bandwidth data 2.2 Identify key parameters of the core network to be measured for capacity management 2.3 Produce a preliminary deployment plan for the core network using architectural principles and assessed demand to maintain integrity of the core network 2.4 Assess additional planning requirements for voice over internet protocol (VoIP) and wireless voice networks from voice networks, and for hosting and content distribution networks from media and content networks 2.5 Create a financial business case for deployment of the core network based on assessed demand to justify a return on investment (RoI) and operational costs 2.6 Discuss unexpected situations with appropriate personnel, with consideration to job specifications, safety and enterprise procedures to establish a solution
3. Complete work and report its impact on network performance	3.1 Produce final deployment plan including recommendations agreed with customer 3.2 Provide a report on network monitoring techniques used to manage the network to ensure the network is performing at optimum level

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance	Description

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	Criteria	
Reading	1.1-1.3, 1.5, 2.1-2.4	• Analyses and evaluates complex written and visual text in specialised workplace documentation to determine key information and specific requirements
Writing	1.3, 2.6, 3.1, 3.2	• Develops material for a specific audience using clear and detailed language and visuals employing expected forms and conventions
Oral Communication	2.6, 3.1, 3.2	• Articulates technical information using an appropriate tone and vocabulary for the intended audience • Listens and responds to different viewpoints and elicits opinions of others through considered questioning
Numeracy	1.6, 1.7, 2.1, 2.3, 2.4	• Employs mathematical calculations to interpret capabilities and limitations of different systems and future configurations
Navigate the world of work	1.1, 1.5, 2.6	• Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements
Interact with others	2.6	• Uses a range of strategies to establish a sense of connection and build rapport with clients and co-workers • Selects and uses appropriate conventions and protocols when communicating with clients and co-workers in a range of work contexts
Get the work done	1.1, 1.3-1.7, 2.1, 2.2, 2.4, 2.5	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes • Makes routine decisions and implements standard procedures for routine tasks, using formal decision-making processes for more complex and non-routine situations • Addresses less predictable problems and initiates standard procedures in response, applying problem solving processes in determining a solution

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNPL407 Plan the deployment of core	ICTNPL4113A Plan the deployment of	Updated to meet standards for Training	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
network	core network	Packages	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNPL407 Plan the deployment of core network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- gather data from information sources efficiently and evaluate how the data relates to the core network
- source major equipment and technologies accurately to be used in a core network and detail their compatibilities
- prepare a business case for deployment of a core network
- produce a deployment plan for a core network including monitoring techniques and recommendations for the customer.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify multiprotocol label switching (MPLS) and internet protocol (IP) architectures across a core network environment
- outline different protocols such as routing information protocol (RIP), enhanced interior gateway routing protocol (EIGRP), open shortest path first (OSPF), and border gateway protocol (BGP) operations
- identify virtual local area networks (VLAN) and virtual private network (VPN) tunnels and explain how they are implemented in an ethernet and MPLS environment
- outline the following features of core network architectures:
  - client business domain, business function and organisation
  - current industry-accepted hardware and software products
  - networking technologies incorporating substantial depth in some areas
  - transmission technologies and protocols

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- theoretical concepts of three or more current industry network development and design methodologies.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications – Network Planning field of work and include access to:

- network design documentation
- other site-related documentation
- equipment specifications
- live network or training facilities
- organisational guidelines
- networked computers
- networked telecommunications components.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNPL408 Produce planning specifications for end-to-end service delivery

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to gather information on the types of end-to-end services and product delivery and evaluate their capability to meet present and future demands.

It applies to individuals with a range of telecommunications skills and extensive knowledge of core and access network capabilities of the service provider. It prepares individuals for entry into planning and design for network additions and implementations to accommodate network growth and new technologies within the industry.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Network Planning

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Scope the project	1.1 Prepare for given work according to site specific safety requirements and enterprise work health and safety (WHS) processes and procedures 1.2 Determine types of currently deployed end-to-end service

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ELEMENT	PERFORMANCE CRITERIA
	delivery networks by accessing and using network information sources 1.3 Produce a brief on how end-to-end service delivery network elements relate to the larger network and their impact on the work
2. Assess capacity and capability of a specific project	2.1 Determine the nature, quantity, architecture and condition of existing end-to-end service delivery network elements and attributes that contribute to determining planning specifications 2.2 Assess capacity and capability limitations of an existing end-to-end service delivery network project by accessing network information sources and conducting site visits 2.3 Assess capacity and capability limitations of a building facility project that contribute to determining planning specifications
3. Assess capacity and capability of product and service delivery	3.1 Determine types of currently deployed products and services by accessing sales and marketing information databases 3.2 Produce a brief evaluating capability and technology of current product and services to meet demands and their relationship to the larger network 3.3 Evaluate emerging technologies that contribute to determining planning specifications for demands of future products and services
4. Produce planning briefs	4.1 Produce a brief on the planning specifications of an end-to-end service delivery network and a building facility project for the planning department to determine current and future network demands 4.2 Produce a brief on products and services planning requirements for sales and marketing to determine provisioning of future demands

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 2.1, 2.2, 2.3, 3.3	• Analyses and evaluates complex written and visual text in specialised workplace documentation to determine key information and specific requirements

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		• Evaluates complex text to determine legislative, regulatory and project requirements
Writing	1.3, 2.1, 2.2, 3.2, 4.1, 4.2	• Develops material for a specific audience using clear and detailed language employing expected forms and conventions
Oral Communication	2.1, 2.2, 3.2, 4.1, 4.2	• Articulates technical information using appropriate tone and vocabulary for the intended audience
Numeracy	2.3, 3.1	• Employs mathematical calculations to compare capabilities and limitations of different systems and future configurations
Navigate the world of work	1.1	• Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements
Get the work done	1.1, 1.2, 2.1-2.3, 3.1, 3.3	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes • Makes routine decisions and implements standard procedures for routine tasks, using formal decision-making processes for more complex and non-routine situations • Addresses less predictable problems and initiates standard procedures in response, applying problem-solving processes in determining a solution • Uses familiar digital technologies and systems to access information, search and enter data and code, present information and communicate with others, cognisant of data security and safety

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNPL408 Produce	ICTNPL4114A	Updated to meet	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
planning specifications for end-to-end service delivery	Produce planning specifications for end-to-end service delivery	standards for Training Packages Clarified performance criteria	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNPL408 Produce planning specifications for end-to-end service delivery

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- access relevant network information databases to determine the types of end-to-end services and products
- conduct site evaluation assessment accurately
- evaluate capacity and capability of end-to-end services to meet current and future demands
- assess limitations of current end-to-end services and produce specifications to meet future demands
- assess limitations of current building facility and services and produce specifications to meet future demands
- summarise and produce planning briefs to network, sales and marketing planning sections.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify emerging technologies, trends and products available overseas that will be in demand in the Australian market
- describe information required to prepare and review limits of:
  - broadband networks
  - data networks
  - facilities and environmental issues
  - fixed access transmission network
  - media and content

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  - regional and metropolitan network
  - voice networks
  - wireless network
- outline the following aspects of network planning:
  - basic network design including routing and redundancy
  - levels of reliability performance standards applicable to specific equipment deployment needs
  - standards and regulations
- describe the distribution structure of networks including:
  - access
  - backbone
  - edge
- outline current equipment and product types to meet future service obligations.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications – Network Planning field of work and include access to:

- a network planning area with systems and deployment rules and standards
- end-to-end services and products databases
- relevant workplace procedures
- product and manufacturing specifications
- codes of practice and standards
- manuals and reference materials.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNPL409 Apply knowledge of regulation and legislation for the telecommunications industry

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to assess the impact of deregulation, competition, economic conditions, regulations and legislation on enterprise-specific policies and procedures and its subsequent incorporation into the planning process.

It applies to individuals with a range of telecommunications skills and extensive knowledge of core and access network capabilities of the service provider. It prepares individuals for entry into planning and design for network additions and implementations to accommodate network growth and new technologies within the industry.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Network Planning

Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Evaluate economic and political influences	1.1 Research the impact of deregulation and competition in the telecommunications industry on planning priorities of competing service providers in Australia due to the different federal government policies

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	1.2 Assess the influence of local and international economic conditions on the growth of the industry that would impact on the planning justification for a new network 1.3 Evaluate and produce a report on the economic and political influences on public and commercial enterprises providing services in a competitive telecommunications market of fast changing technologies
2. Evaluate impact of key regulations and legislation	2.1 Access all legislation governing carriers in Australia to determine the rights of carriers and service providers in installing facilities under Commonwealth legislation 2.2 Use the Telecommunications Industry Regulatory Accounting Framework (RAF) to determine the method used by the Australian Competition and Consumer Commission (ACCC) in enforcing competitive provisions between service providers 2.3 Evaluate the impact on planning of services by the obligation placed by Universal Service Obligation (USO) on service providers to ensure services are reasonably accessible to all people in Australia on an equitable basis 2.4 Produce a summary report evaluating the impact of the legislation on the planning process of access networks and plan strategies to facilitate network planning
3. Apply internal financial compliance	3.1 Use an enterprise-specific investment management system (IMS) to create on the spot reports for performance measurement of an existing planning project against the business plan 3.2 Produce a report of planning work activities incorporating enterprise-specific policies and procedures underpinned by regulatory and compliance obligations

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1, 1.2-1.3, 2.1-2.4, 3.1, 3.2	• Analyses and evaluates complex written and visual text in specialised workplace documentation to determine key information and specific requirements • Evaluates complex text to determine legislative, regulatory and project requirements

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Writing	1.2, 1.3, 2.2-2.4, 3.1, 3.2	• Develops complex material for a specific audience using clear and detailed language employing expected forms and conventions • Prepares reports which incorporate evaluation of information and specialised and cohesive language
Navigate the world of work	1.1, 1.2, 2.1, 2.2, 3.2	• Ensures knowledge of legislative requirements and products is kept up to date in order to provide accurate information • Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements • Identifies and acts on issues that contravene relevant policies, procedures and legal requirements
Get the work done	1.1-1.3, 2.1-2.4, 3.1	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes • Makes routine decisions and implements standard procedures for routine tasks, using formal decision making processes for more complex and non-routine situations • Contributes to continuous improvement of current work practices by applying basic principles of analytical and lateral thinking • Uses familiar digital technologies and systems to access information, search and enter data and code, present information and communicate with others, cognisant of data security and safety

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNPL409 Apply knowledge of regulation and legislation for the telecommunications industry	ICTNPL4150A Apply knowledge of regulation and legislation for the telecommunications industry	Updated to meet standards for Training Packages	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNPL409 Apply knowledge of regulation and legislation for the telecommunications industry

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- produce a comprehensive evaluation report on economic and political influences on the telecommunications industry in Australia
- produce a comprehensive evaluation report on the impact of key regulation and legislation on the telecommunications industry
- produce an accurate summary report evaluating the impact of the legislation on the planning process of access networks.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe the impact of deregulation on the telecommunications industry
- outline the investment management system
- identify and describe the purpose and implementation of relevant telecommunications legislation
- identify and describe the impact of market forces on telecommunications
- outline procedures for developing plans for telecommunications systems
- outline the telecommunications industry, framework and networks.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications – Network Planning field of work and include access to:

- relevant legislation
- planning processes
- Telecommunications Industry Regulatory Accounting Framework (RAF) planning tools
- enterprise-specific investment management system (IMS)
- relevant databases
- licensing requirements
- other related procedures.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNPL410 Plan the telecommunications access network for an estate

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to plan access networks delivering voice, data and video services to customers, and involves the collation and evaluation of data relating to network shortfalls and projected usage, leading to the development of solutions and ultimately network plans for an estate.

It applies to individuals with a range of telecommunications skills and extensive knowledge of core and access network capabilities of the service provider. It prepares individuals for entry into planning and design for network additions and implementations to accommodate network growth and new technologies within the industry.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Network Planning

Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Gather data on network usage	1.1 Determine the type of access network by accessing and using

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for planning activity	network information sources 1.2 Collect planning data using network information sources to determine network trends 1.3 Evaluate new and emerging technologies to determine availability and compatibility with existing network equipment 1.4 Access relevant legislation and associated regulatory and operational codes
2. Evaluate need for network growth	2.1 Evaluate capacity of the existing network to absorb planned growth 2.2 Identify need and likely timing of necessary network increments 2.3 Assess new or alternate technologies to rectify network shortfall 2.4 Identify barriers relating to planned network extensions impacting planning the network realisation 2.5 Assess the impact of not meeting network shortfall needs and long term ramifications on the business
3. Develop solution and network plan to address network shortfall	3.1 Review overall planning parameters prior to commencement of the planning process to produce forecasts for specific network area and cost-benefit analysis 3.2 Establish the optimum solution to address network shortfall with justification for the proposal 3.3 Determine project details and ascertain preliminary costing and resource requirements 3.4 Determine availability of required technology or technology features within the specified timeframe 3.5 Produce a specific network plan with solution and recommendations for anticipated projects for approval according to enterprise procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1-1.4, 2.1-2.5, 3.1, 3.3, 3.4	• Analyses and evaluates complex written and visual text in specialised workplace documentation to determine key information and specific requirements • Evaluates complex text to determine legislative,

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		regulatory and project requirements
Writing	1.3, 2.3, 2.5, 3.2, 3.3, 3.5	• Develops complex material for a specific audience using clear and detailed language and visuals while employing expected forms and conventions • Prepares reports which incorporate evaluation of information and specialised and cohesive language
Oral Communication	2.3, 2.4, 3.2-3.5	• Clearly articulates requirements using language appropriate to audience and environment and participates in a verbal exchange of ideas and solutions
Numeracy	1.2, 2.1, 2.5, 3.1, 3.3, 3.4	• Interprets numerical information and applies basic mathematical calculations relating to time durations and budgetary information
Navigate the world of work	1.4	• Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements
Get the work done	1.2, 1.3, 2.1-2.5, 3.1, 3.2, 3.4	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes • Makes routine decisions and implements standard procedures for routine tasks, using formal decision-making processes for more complex and non-routine situations • Addresses less predictable problems and initiates standard procedures in response, applying problem-solving processes in determining a solution • Contributes to continuous improvement of current work practices by applying basic principles of analytical and lateral thinking

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNPL410 Plan the telecommunications access network for an estate	ICTNPL4151A Plan the telecommunications access network for an estate	Updated to meet standards for Training Packages	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNPL410 Plan the telecommunications access network for an estate

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- implement planning processes including associated monitoring and control mechanisms
- develop effective solutions to address access network shortfalls that satisfy customer and enterprise needs
- develop network plans with consideration of appropriate technological developments and product implementation
- produce accurate forecasts for a specific network including cost-benefit analysis.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify and summarise legislation affecting the telecommunications industry
- outline the features of an access network and the influence on:
  - cost estimates and operating budgets according to enterprise policy
  - telecommunications industry in Australia
- describe the theory of project management and associated databases and project management software programs
- describe the process and features of planning for an access network on an estate
- determine the economic and political influences on public and commercial enterprises
- describe the financial authorities and delegations associated with an access network plan
- define the influence of the local and international economic conditions on the telecommunications industry
- describe the typical challenges and limits facing technology today and the consideration of future needs

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- describe the process of collating and writing project briefs, reports and project charters.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications – Network Planning field of work and include access to:

- a network planning area systems and deployment
- rules and standards
- relevant databases
- licensing requirements and other site related procedures.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNPL411 Apply compliance requirements to telecommunications work

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to satisfy the regulatory environment in the planning, design and installation of telecommunications equipment and infrastructure.

It applies to individuals with the organisational, economic and regulation skills to enable them to plan and design the access network infrastructure of private and/or carrier service providers. These individuals may be responsible for small projects or parts of larger projects and for the operation and engineering of the enterprise and telecommunications network in general.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Network Planning

Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Evaluate design for activities subject to standards, regulations, codes of practice and	1.1 Research the range of activities subject to regulations, standards, legislation and codes of practice for their design 1.2 Examine organisational procedures developed to deal with these requirements.

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legislation	1.3 Examine construction requirements for each activity and determine any applicable regulations, codes or practices, 1.4 Access knowledge bases, authorities and records for areas and activities covered by these requirements, 1.5 Examine public records for planning restrictions that may impact the design and construction of a telecommunications network
2. Evaluate design for activities that require approval to enter land or premises	2.1 Determine the rights of entry and notifications necessary to enter property for the purpose of designing telecommunications facilities 2.2 Examine what courses of action are available in case of dispute 2.3 Access legislation governing carriers and service providers in Australia to determine the rights of carriers and service providers in installing facilities under Commonwealth legislation 2.4 Determine activities that must be undertaken during survey and construction to meet the various requirements
3. Examine processes necessary to facilitate completion of a design to meet the relevant regulatory environments	3.1 Discuss with governing authorities, consultants and other industry experts the steps necessary to meet the legislative requirements of a designer and constructor of the network infrastructure design 3.2 Initiate studies and information gathering activities to develop a design which is compliant to the requirements 3.3 Produce a report of work activities incorporating enterprise-specific policies and procedures underpinned by regulatory and compliance obligations 3.4 Compare the newly developed solutions to meet regulatory environments with financial plans to meet budgetary requirements for the design project
4. Complete legally binding agreements and document all procedures	4.1 Gather all reports and studies to support the design and construction activities and incorporate with final design 4.2 Diarise all activities for evidence of compliance with requirements in case of future actions 4.3 Ask relevant parties to sign legally binding documentation to fulfil obligations to access land or premises as required 4.4 Examine what alternative courses of action are available in case of dispute prior to or after an agreement is signed by all parties

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

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Skill	**Performance Criteria**	**Description**
Reading	1.1-1.5, 2.1, 2.3, 3.2, 4.1, 4.4	• Selects, synthesises and critically evaluates complex and often technically complex texts, and integrates prior knowledge to improve understanding
Writing	1.1, 3.2, 3.3, 4.1, 4.2	• Integrates information and ideas from a range of sources, and documents these in a form appropriate to audience and context
Oral Communication	3.1, 3.2, 4.3	• Articulates clearly using specific and relevant language suitable to audience to convey requirements and listening and questioning techniques to confirm understanding
Numeracy	1.1, 1.3, 1.4, 3.1, 3.2, 3.4, 4.1, 4.2	• Collects, organises, interprets and communicates mathematical concepts embedded in data and information
Navigate the world of work	1.1-1.5, 2.1, 2.3,	• Recognises and responds appropriately within a complex regulatory environment and identifies issues that may have legal implications • Independently accesses a range of resources to acquire knowledge
Interact with others	2.2, 3.1, 4.3, 4.4	• Actively seeks a range of perspectives as part of work role • Anticipates possible sources of conflict, develops conflict resolution strategies and reflects on effectiveness of dispute resolution processes and actions.
Get the work done	1.1-1.5, 2.1-2.4, 3.1-3.4, 4.1-4.4	• Researches, plans, and manages complex tasks taking into account current and new technology, facilities and features when developing options • Analyses the impact of financial, regulatory, policy, procedures and other factors in planning, and utilises sophisticated problem-solving skills to assess conditions

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTNPL411 Apply compliance requirements to telecommunications work	ICTNPL4247A Apply compliance requirements to telecommunications work	Updated to meet standards for Training Package	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNPL411 Apply compliance requirements to telecommunications work

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- produce a detailed report from a design, identifying acts and codes of practice for each aspect of a project
- produce a report detailing common construction practices to mitigate the environmental impact of the project
- produce a summary report detailing a designer's and constructor's obligations regarding land access under the telecommunications act and code of practice.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- summarise regulations, standards, legislation and codes of practice relevant to the telecommunications industry
- describe the impact of the following on telecommunications systems and installations:
  - Environmental Protection Authority and legislation
  - waterways and their responsibilities
  - national, state and council regulations
  - National Parks and Wildlife acts
  - ports authority
  - rail authority and their requirements
  - power distribution authority and requirements
  - roads authority
  - footpath allocations

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- describe technical compliance requirements for the following:
  - separations and depth of cover
  - earth potential rise (EPR)
  - low frequency induction (LFI)
- describe the framework for the telecommunications industry including its various networks

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications – Network Planning field of work and include access to:

- relevant legislation
- planning processes and telecommunications industry Regulatory Accounting Framework (RAF)
- planning tools
- enterprise-specific investment management system (IMS)
- relevant databases
- licensing requirements
- relevant procedures.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNPL501 Develop planning strategies for core network design

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to develop specifications for core networks to be used by network designers.

It applies to technical officers or engineers from private and public organisations working in a network planning team, who combine technical skills with broader organisational skills to plan the various core network technologies.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Network Planning

Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Evaluate core network requirements and infrastructure capability	1.1 Estimate likely growth in core network use by analysing forecasting market intelligence data on customer demand 1.2 Analyse current traffic and growth trends in edge and backbone networks to forecast traffic growth and capacity demand for the core network 1.3 Compare available capacity, capability and parameters of current core

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	infrastructure deployment against researched demand data to identify infrastructure shortfalls 1.4 Quantify network requirements for any upgrades or network augmentation 1.5 Determine relevant standards and regulatory requirements to be considered in core network planning 1.6 Formulate justification to proceed by analysing business requirements and benefits to the business
2. Prepare strategic plan and scoping document	2.1 Determine appropriate technologies and network elements for core network deployment, including new or alternative solutions to meet business requirements 2.2 Select commercially viable technology compatible with the existing network to deploy with existing and future network 2.3 Prepare a planning document, and supporting documentation with recommendations, that complies with deployment standards and regulatory requirements 2.4 Provide estimated costs and schedule for a planning solution
3. Produce project brief	3.1 Evaluate and summarise project scope into required briefing format with supporting documentation, that complies with core network deployment rules 3.2 Plan project delivery to suit business requirements and practical limitations 3.3 Produce core networks specifications with approvals and present to the design section to produce detailed design specifications

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1-1.3, 1.5, 1.6, 2.1-2.3	• Analyses and evaluates complex written and visual text in specialised workplace documentation to determine key information and specific requirements • Evaluates complex text to determine legislative, regulatory and project requirements
Writing	1.1-1.3, 1.6, 2.3, 2.4, 3.1-3.3	• Develops complex material for a specific

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		audience using clear and detailed language and visuals while employing expected forms and conventions • Prepares reports which incorporate evaluation of information and specialised and cohesive language
Oral Communication	1.5, 2.3	• Clearly articulates requirements using language appropriate to audience and environment and participates in a verbal exchange of ideas and solutions
Numeracy	1.1-1.4, 1.6, 2.1, 2.2, 2.4	• Interprets numerical information and applies mathematical calculations relating to time durations and budgetary information • Analyses numerical information to measure usage and calculates metric measurements, quantities/ratios and financial data using appropriate tools
Navigate the world of work	1.5, 2.3	• Ensures knowledge of legislative requirements and products is kept up-to-date to provide accurate information • Takes full responsibility for following policies, procedures and legislative requirements, and identifies organisational implications of new legislation or regulations
Interact with others	3.3	• Implements strategies for a diverse range of colleagues and clients to build rapport and foster strong relationships
Get the work done	1.1, 1.2, 1.5, 1.6, 2.1, 2.2, 2.4, 3.2	• Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others, taking into account capabilities, efficiencies and effectiveness • Monitors progress of plans and schedules and reviews and changes them to meet new demands and priorities • Makes critical decisions quickly and intuitively in complex situations, taking into consideration a range of variables, including outcomes of previous decisions • Applies systematic and analytical decision-making processes for complex and non-routine situations

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTNPL501 Develop planning strategies for core network design	ICTNPL5071A Develop planning strategies for core network design	Updated to meet standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNPL501 Develop planning strategies for core network design

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- use data to accurately interpret growth patterns and develop options for core network designs which satisfy customer and enterprise financial goals
- develop a network plan which is current with emerging technologies
- produce specifications and costing
- document a project brief with accompanying project implementation documentation.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain the capability and limitations of the various core network technologies for present and future needs
- outline the following specific features of core network design:
  - elements and architecture of core networks
  - limits of a core network
  - typical core network technologies
- identify and describe elements and architectures of the various core technologies
- explain key technologies that make up the core network
- outline the following general features of core network design:
  - distribution structure of networks including backbone, core and edge
  - levels of reliability performance standards applicable to specific equipment deployment needs
  - network design including routing and redundancy

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- standards and regulations.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications – Network Planning field of work and include access to:

- computer aided design (CAD)
- computer networks
- data for network planning
- network equipment deployment plans
- planning models
- relevant standards and regulations.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNPL502 Develop planning strategies for access network design

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to develop specifications for access networks to be used by network designers, and involves gathering information on anticipated demand and business requirements for the access network to determine design criteria to meet current and future needs.

It applies to individuals with a high level of specialist technical skills and knowledge in telecommunications and IT networks using internet protocol (IP) systems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Network Planning

Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Evaluate access network requirements and infrastructure capability	1.1 Estimate likely growth in access network use by analysing forecasting market intelligence data on customer demand 1.2 Compare available capacity and capability of current access infrastructure deployment against researched demand data to identify infrastructure and product shortfalls

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	1.3 Quantify network requirements for upgrades or network augmentation to increase capacity and capability of existing network 1.4 Determine relevant standards, business and regulatory requirements to be considered in access network planning 1.5 Formulate justification to proceed by analysing business requirements and benefits to the business
2. Prepare strategic plan and scoping document	2.1 Determine appropriate technologies, network elements and equipment for access network deployment, including new or alternative solutions to meet business requirements 2.2 Select commercially viable technology compatible with the existing network to deploy with existing and future network 2.3 Prepare planning document and supporting documentation with recommendations that complies with deployment standards and regulatory requirements 2.4 Provide estimated costs and schedule for a planning solution
3. Produce project brief	3.1 Evaluate and summarise project scope into the required briefing format with relevant supporting documentation for a project brief that complies with access network deployment rules 3.2 Plan project delivery to suit business requirements and practical limitations 3.3 Produce access networks specifications with approvals and present to the design section to produce detailed design specifications

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Learning	2.1	• Employs a range of approaches and investigative techniques to consider present and future needs of the network and to overcome obstacles
Reading	1.1, 1.2, 1.4, 2.1, 2.2, 2.3, 3.1, 3.2	• Analyses and evaluates complex written and visual text in specialised workplace documentation to determine key information and specific requirements • Evaluates complex text to determine legislative, regulatory and project requirements

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Writing	1.2, 1.5, 2.3, 3.1-3.3	• Develops complex material for a specific audience using clear and detailed language and visuals while employing expected forms and conventions • Prepares reports which incorporate evaluation of information and specialised and cohesive language
Oral Communication	1.4, 2.2, 3.1, 3.3	• Clearly articulates requirements using language appropriate to audience and environment, and participates in a verbal exchange of ideas and solutions
Numeracy	1.1-1.3, 1.5, 2.4	• Interprets numerical information and applies mathematical calculations relating to time durations and budgetary information • Analyses numerical information to measure usage and calculates metric measurements, quantities/ratios and financial data using appropriate tools
Navigate the world of work	1.4, 2.3	• Ensures knowledge of legislative requirements and products is kept up-to-date to provide accurate information • Takes full responsibility for following policies, procedures and legislative requirements and identifies organisational implications of new legislation or regulation
Get the work done	1.1, 1.2, 1.4, 1.5, 2.1-2.4, 3.1, 3.2	• Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others, taking into account capabilities, efficiencies and effectiveness • Monitors progress of plans and schedules, and reviews and changes them to meet new demands and priorities • Responds intuitively to problems requiring immediate resolution, drawing on past experiences to focus on the cause of a problem rather than the symptom • Applies systematic and analytical decision making processes for complex and non-routine situations

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTNPL502 Develop planning strategies for access network design	ICTNPL5096A Develop planning strategies for access network design	Updated to meet standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNPL502 Develop planning strategies for access network design

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- interpret growth patterns using available data
- develop options for access network design which satisfy customer and enterprise financial goals
- develop a clearly documented network plan, within specifications and including merging technological development and product implementation.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain capability and limitations of the various access network technologies
- identify current equipment to meet future service obligations
- outline the role of the following specific features of network planning:
  - broadband networks
  - data networks
  - elements and architecture of the various access networks and their technologies
  - facilities and environmental issues
  - limits of a fixed access transmission network
  - media and content
  - regional and metropolitan network
  - typical access network technologies
  - voice networks
  - wireless network

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- explain distribution structure of networks, including backbone, access and edge
- identify key technologies that make up the access network
- outline the following general features of network planning:
  - levels of reliability performance standards, applicable to specific equipment deployment needs
  - network design including routing and redundancy
  - standards and regulations
- describe typical problems and challenges with the capability and limitations of the various access networks.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications – Network Planning field of work and include access to:

- computer aided design (CAD)
- computer networks
- data for network planning
- network equipment deployment plans
- planning models
- relevant standards and regulations.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNPL503 Apply service measures and demand forecasting to products and services planning

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to analyse customer bases and market demands, and use forecasting tools to predict customer demands for new products and services.

It applies to technical staff moving into planning and management positions with a high level of specialist technical skills and knowledge in telecommunications and IT networks using internet protocol (IP) systems for small projects, or parts of larger projects.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Network Planning

Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Analyse customer base	1.1 Establish reasons for forecasting in network planning, and factors that influence forecasting 1.2 Collate data from appropriate organisations involved in planning initiatives for planning delivery of products and services

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	1.3 Establish market segmentation to improve marketing effectiveness on new technology adoption 1.4 Analyse market segments of customers, based on geography and demographics, for a new service or product and predict adoption rates
2. Evaluate current utilisation	2.1 Evaluate current service usage of the network and determine current traffic load 2.2 Evaluate current network occupancy and determine any spare capacity
3. Predict future customer base	3.1 Evaluate expected customer growth and segment mix in a defined geographical area, and assess impact on network planning 3.2 Use a forecasting model and predict customer demand for new technology products and services
4. Use property market and development data to produce plans	4.1 Develop strategic plans on infrastructure planning using planning authority data for development and redevelopments 4.2 Produce a plan for future development projects using property market data
5. Predict future service requirements	5.1 Create a customer service plan to maintain valuable customer relationships and strengthen business 5.2 Measure customer service results using key factors that provide an indicator for customer service quality 5.3 Use forecasting tools to predict future service demand and requirements for emerging technology services of Next Generation Networks (NGN)
6. Produce network forecast and documentation	6.1 Produce geographically-based network growth forecasts utilising change in customer base, changes to property market and future service predications 6.2 Produce and present documentation

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1, 1.3, 1.4, 2.1, 2.2, 3.1, 4.1, 5.1, 5.2,	• Analyses and evaluates complex written and visual text in specialised workplace documentation to determine key information and

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	6.1	specific requirements • Evaluates complex text to determine legislative, regulatory and project requirements
Writing	1.2-1.4, 4.1, 4.2, 5.1, 6.1, 6.2	• Develops complex material for a specific audience using clear and detailed language and visuals while employing expected forms and conventions • Prepares reports which incorporate evaluation of information and specialised and cohesive language
Oral Communication	1.1-1.4, 4.1, 5.1, 6.2	• Clearly articulates requirements using language appropriate to audience and environment and participates in a verbal exchange of ideas and solutions
Numeracy	1.2, 1.4, 2.1, 2.2, 3.1, 3.2, 4.1, 4.2, 5.2, 5.3	• Interprets numerical information and applies appropriate formula relating to time durations, budgetary information and different data • Analyses numerical information to measure present and predicted usage and calculates metric measurements, quantities/ratios and financial data using appropriate tools
Interact with others	5.1, 5.2	• Selects, implements and seeks to improve protocols governing communications to clients and co-workers in a range of work contexts • Implements strategies for a diverse range of colleagues and clients to build rapport and foster strong relationships
Get the work done	1.1, 1.3, 1.4, 2.1, 2.2, 4.1, 5.1, 5.3, 6.1	• Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others taking into account capabilities, efficiencies and effectiveness • Makes critical decisions quickly and intuitively in complex situations, taking into consideration a range of variables, including outcomes of previous decisions

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		• Applies systematic and analytical decision-making processes for complex and non-routine situations • Investigates new and innovative ideas as a means to continuously improve, work practices and processes through consultation, formal and analytical thinking

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNPL503 Apply service measures and demand forecasting to products and services planning	ICTNPL5101A Apply service measures and demand forecasting to products and services planning	Updated to meet standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNPL503 Apply service measures and demand forecasting to products and services planning

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- interpret accurately the growth patterns and development options which satisfy customer and enterprise financial goals
- predict future customer base and service requirements
- produce comprehensive network growth forecasts, utilising changes to customer base, property market and future service predictions.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain different levels of reliability performance standards applicable to specific equipment deployment needs
- identify and explain emerging technologies that affect this industry
- identify factors that can affect forecasting demand
- identify and apply forecasting models and forecasting tools
- explain market segmentations
- explain network designs and new products and services
- explain next generation network (NGN) services
- identify planning authorities
- describe planning initiatives
- describe the process to prepare and review customer bases
- identify different service measures.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications – Network Planning field of work and include access to:

- data from organisations involved in planning initiatives
- a range of software currently used in industry
- relevant regulations
- specifications that impact service measures and forecasting activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNPL504 Develop planning strategies for building environment design

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to develop planning strategies for the design phase to meet present and future demands, and involves gathering information on network capability, anticipated network deployment demand and scoping design requirements to produce building planning specifications.

It applies to individuals with a high level of specialist technical skills and knowledge in telecommunications and IT networks using internet protocol (IP) systems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Network Planning

Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Evaluate building environment requirements	1.1 Utilise network equipment deployment plans to convert network equipment specifications into building requirements data 1.2 Determine planned and forecast network equipment deployment locations and quantities to prioritise tasks 1.3 Formulate justification to proceed by analysing business

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	requirements and benefits to the business 1.4 Analyse current building capacities or capabilities against planned deployment data to determine building environment shortfalls or additional needs 1.5 Determine minimum needs required to address identified building services shortfalls, upgrades or changes 1.6 Identify relevant standards, business and regulatory requirements that are essential for building plan compliance
2. Scope building design requirements	2.1 Quantify building requirements from known needs to determine if any standard deliverables can be used 2.2 Assess if requirements can be met using new or alternative solutions 2.3 Provide estimated costs and schedule to determine a planning solution 2.4 Prepare a scoping document and supporting documentation with recommendations that complies with deployment standards and regulatory requirements
3. Produce project brief	3.1 Prepare a project scope in required briefing format to present to the design section 3.2 Plan project delivery to meet any business timing and funding constraints 3.3 Produce building planning specifications with approvals and present to the building design section to be used for detailed design or construction specifications

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1-1.5, 1.6, 2.2, 2.4	• Analyses and evaluates complex written and visual text in specialised workplace documentation to determine key information and specific requirements • Evaluates complex text to determine legislative, regulatory and project requirements
Writing	1.3, 2.4, 3.1-3.3	• Develops complex material for a specific audience

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		using clear and detailed language and visuals while employing expected forms and conventions • Prepares reports which incorporate evaluation of information and specialised and cohesive language
Oral Communication	1.3, 2.2, 3.3	• Clearly articulates requirements using language appropriate to audience and environment, and participates in a verbal exchange of ideas and solutions
Numeracy	1.1, 1.3, 1.4, 2.1, 2.3, 2.4, 3.1-3.3	• Interprets numerical information and applies appropriate mathematical formulas to calculate different data • Analyses numerical information to measure present and predicted usage and calculates metric measurements, quantities/ratios and financial data using appropriate tools
Navigate the world of work	1.6, 2.4, 3.1	• Takes full responsibility for following policies, procedures and legislative requirements and identifies organisational implications of new legislation or regulation • Identifies and resolves key business issues, processes and practices that may have legal implications • Ensures knowledge of legislative requirements and products is kept up-to-date to provide accurate information
Interact with others	3.1, 3.3	• Selects, implements and seeks to improve protocols governing communications to clients and co-workers in a range of work contexts • Implements strategies for a diverse range of colleagues and clients to build rapport and foster strong relationships
Get the work done	1.2-1.5, 2.1-2.4, 3.2	• Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others, taking into account capabilities, efficiencies and effectiveness • Makes critical decisions quickly and intuitively in complex situations, taking into consideration a range of variables, including outcomes of previous decisions • Applies systematic and analytical decision-making processes for complex and non-routine situations

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTNPL504 Develop planning strategies for building environment design	ICTNPL5154A Develop planning strategies for building environment design	Updated to meet standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNPL504 Develop planning strategies for building environment design

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- assess building environment requirements to provide network capability for current and forecast demand including consideration of merging technological development and product implementation
- prepare and present a detailed scoping document with solutions, costing and project scheduling recommendations
- meet forecast network capability needs and regulatory requirements.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify and discuss capability and limitations of the various network technologies to meet present and future needs
- describe different costing and funding models
- outline the process to review limits of a building's facilities and services
- identify network equipment requirements and use to derive building's specifications
- identify network building design
- identify and apply relevant regulations and standards
- discuss typical problems and challenges that describe the limitations of the various building projects work
- identify ways to remain abreast of current building requirements to meet future service obligations.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications – Network Planning field of work and include access to:

- computer aided design (CAD)
- computer networks
- data for network planning
- network equipment deployment plans
- planning models
- relevant standards and regulations.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNPL601 Plan the development and growth of the telecommunications network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to analyse and evaluate forecast data to plan development and growth of the telecommunications network.

It applies to individuals with a high level of specialist technical skills and knowledge in optical telecommunications and IT networks using internet protocol (IP) systems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Network Planning

Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Gather data related to existing and projected network usage	1.1 Access market intelligence for information on customer demand on the network and likely growth in network use 1.2 Obtain demand data to plan for potential network traffic quantity and flow 1.3 Access information relating to new and emerging technologies, facilities and features, and their specific applications

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	1.4 Access relevant legislation and associated operational codes and analyse impact on planning processes
2. Assess need for network growth	2.1 Evaluate capacity of existing network to absorb planned growth using network capacity usage and traffic measurements 2.2 Plan likely timing of necessary network increments to minimise impact on the network 2.3 Assess use of new or alternate technologies to meet forecast growth
3. Develop network plans	3.1 Assess overall planning parameters including approved business plan prior to commencement of planning process 3.2 Analyse gathered information and produce a project plan with specifications to meet network growth 3.3 Conduct appropriate investment study including cost benefit analysis, where required, with consideration of barriers that may affect project plan 3.4 Produce a network plan with detailed specifications and seek approval according to enterprise procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1-1.4, 2.3, 3.1, 3.3	• Analyses and evaluates complex written and visual text in specialised workplace documentation to determine key information and specific requirements • Evaluates complex text to determine legislative, regulatory and project requirements, and their potential impact on the project
Writing	3.1, 3.2, 3.4	• Develops complex material for a specific audience using clear and detailed language and visuals while employing expected forms and conventions • Prepares reports which incorporate evaluation of information and specialised and cohesive language
Oral	1.1, 1.3	• Clearly articulates requirements using language appropriate to audience and environment, and

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Communication		participates in a verbal exchange of ideas and solutions
Numeracy	2.1, 2.2, 3.1, 3.2, 3.4	• Interprets numerical information and applies appropriate mathematical formulas to calculate different future possibilities • Analyses data to measure present and predicted usage and assess different scenarios
Navigate the world of work	1.4	• Ensures knowledge of legislative requirements and products is kept up-to-date to provide accurate information • Develops and implements strategies that ensures organisational policies, procedures and regulatory requirements are being met
Get the work done	1.1-1.4, 2.1, 2.3, 3.1-3.3	• Plans strategic priorities and outcomes within a flexible, efficient and effective context in a diverse environment exposed to competing demands • Gathers and analyses data and seeks feedback to improve plans and processes • Makes high-impact decisions in a complex and diverse environment, using input from a range of sources • Addresses complex problems involving multiple variables, using formal analytical, lateral thinking techniques experience and knowledge to focus in on the root cause • Uses digital technologies to manage business operations and actively investigates new technologies for strategic and operational purposes

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNPL601 Plan the development and growth of the telecommunications network	ICTNPL6029A Plan the development and growth of the telecommunications network	Updated to meet standards for Training Packages	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNPL601 Plan the development and growth of the telecommunications network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- gather comprehensive data related to existing and projected network usage
- accurately assess need for network growth
- develop detailed network plans.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline the following general processes of network growth:
  - cost estimates and operating budgets according to enterprise policy
  - project management theory, associated databases and project management software programs
  - telecommunications industry in Australia
- outline economic and political influences on public and commercial enterprises
- outline economic and political influences on public and commercial enterprises
- identify relevant financial authorities and delegations
- outline the influence of local and international economic conditions on the telecommunications industry
- describe typical challenges and limits facing technology today and consideration of future needs
- identify relevant legislation
- explain the process for collating and writing project briefs, reports and project charters.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications – Network Planning field of work and include access to:

- data from organisations involved in planning initiatives
- a range of software currently used in industry
- relevant regulations
- specifications that impact forecasting activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNPL602 Forecast service demand

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to develop forecasts for demand for telecommunications services and includes assessing activities that may change service demand and capacity requirements.

It applies to individuals with a high level of specialist technical skills and knowledge in optical telecommunications and IT networks using internet protocol (IP) systems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Network Planning

Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Gather forecast intelligence	1.1. Access market intelligence for information on customer demand on the network and likely growth in network use 1.2 Obtain demand data to assess potential network traffic quantity and flow 1.3 Access information relating to new and emerging technologies, facilities and features, and their specific applications to evaluate market trends in new technology implementation

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	1.4 Obtain data from network analysis to determine the state of the existing network using customer complaint reports and network fault incidence rate
2. Produce forecast service demand information	2.1 Analyse and process all collated data and prepare to the format required for forecasting activity 2.2 Select and configure a suitable software forecasting tool to process collated data 2.3 Evaluate collated data to generate forecasts of service demand using information in reference to new developments 2.4 Compile forecast figures and report according to enterprise policy
3. Review forecasts and update systems records	3.1 Review forecasts according to enterprise policy 3.2 Ensure forecasts consider new developments in the area and technological changes where appropriate 3.3 Maintain updated systems records with information received from each installation amendment activity

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1-1.4, 2.1, 2.4, 3.1, 3.2	• Analyses and evaluates complex written and numerical text in specialised documentation to determine key information and specific requirements • Evaluates complex text to determine legislative, regulatory and project requirements and their potential impact on the project
Writing	2.4, 3.3	• Develops complex material for a specific audience using clear, detailed language and visuals while employing expected forms and conventions • Prepares reports which incorporate evaluation of information, and specialised and cohesive language
Oral Communication	1.1, 1.3	• Elicits views and opinions of others and obtains information by listening and questioning
Numeracy	1.4, 2.1-2.4, 3.3	• Interprets numerical information and applies

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		appropriate mathematical formulas to calculate different future possibilities • Analyses data to measure present and predicted usage and assess different scenarios
Navigate the world of work	2.4, 3.1	• Monitors and reviews organisation's policies, procedures and adherence to legislative requirements to implement and manage change
Get the work done	1.1-1.4, 2.1-2.3, 3.2	• Plans strategic priorities and outcomes within a flexible, efficient and effective context in a diverse environment exposed to competing demands • Gathers and analyses data and seeks feedback to improve plans and processes • Addresses complex problems involving multiple variables, using formal analytical, lateral thinking techniques experience and knowledge to focus in on the root cause • Uses digital technologies to manage business operations and actively investigates new technologies for strategic and operational purposes

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNPL602 Forecast service demand	ICTNPL6030A Forecast service demand	Updated to meet standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNPL602 Forecast service demand

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- collect accurate data vital to development of traffic and service variation
- generate relevant forecasts in relation to traffic and service variation using appropriate forecasting techniques
- accurately review forecasts relevant to specific planning periods.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify and describe common telecommunications measurement quantities
- identify network and transmission equipment and describe their capabilities
- outline network topologies and common access and transmission hierarchies
- explain the configuration and use of software forecasting tools
- outline different forecasting techniques and sources of data to aid forecasting
- describe sources of market intelligence
- identify and describe new and emerging technologies
- outline typical customer applications and usage levels.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications – Network Planning field of work and include access to:

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- data from organisations involved in planning initiatives
- a range of current software
- relevant regulations
- specifications that impact forecasting activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNPL603 Undertake network performance analysis

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to undertake and manage monitoring, analysis and improvement of network performance, and involves analysing problems and organising repairs as well as coordinating software and hardware upgrades.

It applies to individuals with a high level of specialist technical skills and knowledge in optical telecommunications and IT networks using internet protocol (IP) systems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Network planning

Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Analyse network performance to determine service levels	1.1 Establish network type and quality of service (QoS) standard levels required, in conjunction with equipment suppliers and customer opinion, to determine the benchmark for network performance standards 1.2 Analyse trend analysis data and statistical data to assess level and type of network degradation

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	1.3 Conduct performance tests according to established performance checklist to systematically evaluate QoS levels using appropriate performance analysis tools 1.4 Analyse test results and determine QoS levels and network problems 1.5 Establish restoration times in the event of service breakdown 1.6 Determine, organise and allocate resources necessary to monitor service levels
2. Monitor integrity of the network	2.1 Monitor alarm panels and verify message retrieval system on an ongoing basis to maintain network integrity 2.2 Undertake real time analysis of data from all sources to determine network health
3. Manage delivery of quality service	3.1 Conduct monitoring activities to maintain QoS levels and network integrity 3.2 Analyse trouble reports and performance data including customer feedback on a regular basis as an indicator of network performance 3.3 Analyse drive test data as an input to performance and optimise the network to improve network level of service
4. Analyse problems and organise repair	4.1 Analyse performance results regularly and initiate investigations when performance levels are below specified standards and recommend network changes 4.2 Analyse causes of problems by testing specific network components 4.3 Isolate problems where possible and escalate repair according to enterprise policy 4.4 Undertake evaluation testing after repair to ensure the problem has been rectified
5. Coordinate upgrade of software and hardware	5.1 Develop strategies to affect changes according to recommendations and produce a plan to coordinate activities 5.2 Produce a cost estimate of proposed change and submit a cost-benefit study for approval 5.3 Confirm shortcomings in hardware and software and negotiate with planners for network modifications 5.4 Evaluate modifications to ensure network compatibility and use of appropriate protocols providing QoS in the network 5.5 Produce a plan for software and hardware changes to be initiated with minimum network downtime and customer impact 5.6 Undertake tests following upgrade to ensure the level of performance planned as a result of the upgrade has been achieved 5.7 Produce documentation including configuration details and tests results and submit to network planner

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.3, 1.6, 2.2, 3.1-3.3, 4.1	• Analyses and evaluates complex written and numerical text in specialised documentation to determine key information and specific requirements • Evaluates complex text to determine a plan to meet current and future needs
Writing	1.1, 1.6, 4.1, 5.1-5.3, 5.5, 5.7	• Develops complex material for a specific audience using clear and detailed language and visuals while employing expected forms and conventions • Prepares reports which incorporate evaluation of information, recommendations and specialised and cohesive language
Oral Communication	1.1, 1.6, 3.2, 4.1, 5.3	• Elicits views and opinions of others and obtains information by listening and questioning
Numeracy	1.2-1.5, 2.2, 3.2, 4.1, 5.2	• Interprets numerical information and applies appropriate mathematical formulas to calculate different future possibilities • Analyses data to measure present and predicted usage and assess different scenarios
Navigate the world of work	1.3, 4.3	• Develops and implements strategies that ensure organisational policies, procedures and regulatory requirements are being met • Ensures knowledge of legislative requirements and products is kept up-to-date to provide accurate information
Interact with others	1.1, 1.6, 3.2, 4.1, 5.3, 5.7	• Selects, implements and manipulates communications systems, processes and practices for maximum impact • Uses a variety of relevant communication tools and strategies in building and maintaining effective working relationships • Influences and fosters a collaborative culture facilitating a sense of commitment and

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		workplace cohesion
Get the work done	1.1-1.6, 2.1, 2.2, 3.1-3.3, 4.1-4.4, 5.1, 5.3, 5.4, 5.6	• Plans strategic priorities and outcomes within a flexible, efficient and effective context in a diverse environment exposed to competing demands • Gathers and analyses data and seeks feedback to improve plans and processes • Makes high-impact decisions in a complex and diverse environment, using input from a range of sources • Addresses complex problems involving multiple variables, using formal analytical, lateral thinking techniques experience and knowledge to focus in on the root cause • Uses digital technologies to manage business operations and actively investigates new technologies for strategic and operational purposes

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNPL603 Undertake network performance analysis	ICTNPL6046A Undertake network performance analysis	Updated to meet standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNPL603 Undertake network performance analysis

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- interpret current network performance data accurately
- monitor integrity of the network
- manage delivery of quality service efficiently
- conduct accurate performance tests using appropriate performance analysis tools
- analyse problems and organise repair applying escalation procedures, if required, within service assurance guidelines
- coordinate upgrade of software and hardware efficiently.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain the process for cost estimation
- outline the following aspects of customer interaction:
  - customer policies
  - expectancies
  - service level agreements
- explain the following features of the network:
  - alarms
  - compatibility and interoperability
  - operations
  - performance analysis methodologies
  - performance analysis tools

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  - performance tests
  - planning and design principles
- explain protocols providing QoS
- describe QoS standard levels
- describe software and hardware upgrades
- outline the following technologies and architectures:
  - switching network
  - transmission network
- describe technologies for the customer network.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications – Network Planning field of work and include access to:

- a site where network performance analysis may be conducted
- data from organisations involved in planning initiatives
- a range of current software
- relevant regulations
- specifications that impact service measures
- forecasting activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK305 Install and manage network protocols

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to install and manage network protocols in a networking environment.

It applies to individuals with competent information and communications technology (ICT) skills, working as network administrators who are required to ensure that appropriate protocols have been installed in networks to allow user functionality and maintenance.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Install and manage network protocols	1.1 Select, test and validate appropriate network protocol services 1.2 Design a network addressing system, with subnet and host IDs, including appropriate devices 1.3 Configure hosts and workstations to use IP addresses either manually or through automatic allocation of addresses, such as found with dynamic host configuration protocol (DHCP)
2. Identify network	2.1 Review a range of well-known network protocol applications

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ELEMENT	PERFORMANCE CRITERIA
protocol applications	2.2 Evaluate client user requirement and recommend network protocol services 2.3 Apply internet protocol (IP) addressing scheme according to approved policy and procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	2.2, 2.3	• Recognises and interprets textual information, including technical manuals, to establish the job requirements
Writing	2.2	• Uses specific and relevant language to document new file systems, user access and disaster recovery procedures
Oral Communications	2.2	• Articulates clearly using specific and relevant language suitable to audience to convey requirements • Uses listening and questioning techniques to confirm understanding
Navigate the world of work	2.3	• Complies with explicit organisational policies and procedures • Ensures knowledge of legislative requirements and products is kept up to date
Get the work done	1.1-1.3, 2.1	• Takes responsibility for planning and organising own workload, identifying ways of sequencing and combining elements for greater efficiency, and considering how to link with the work of others • Understands the purposes, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine tasks • Initiates standard procedures when developing and refining configuration protocols

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Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNWK305 Install and manage network protocols	ICANWK305A Install and manage network protocols	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK305 Install and manage network protocols

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- configure, test and validate network protocols in order to facilitate interconnectivity
- install and manage network protocols in a network, and troubleshoot problems.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe the client business domain, including client organisation structure and business functionality
- list current communications technologies and their associated protocols
- outline current industry accepted hardware and software products, and general features and capabilities
- summarise network protocols currently in use in the organisation and industry, including:
  - transmission control protocol
  - internet protocol (TCP/IP)
  - OSI models
- clarify the vendor product range and development directions
- describe how network protocols transcend organisational size and network complexity.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the network industry, and include access to:

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- a live network
- application software and operating system
- appropriate learning and assessment support when required
- networked computers
- organisational guidelines
- technical documentation and installation manuals
- vendor software.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK409 Create scripts for networking

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to undertake scripted programming tasks for networking related activities.

It applies to individuals with competent technical skills employed in network or systems administration roles.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Develop algorithms to represent solutions to a given problem	1.1 Consult with client and key stakeholders to identify the problem and associated script requirements 1.2 Employ abbreviated software development cycle to script creation 1.3 Develop an algorithm to solve the problem and meet client requirements 1.4 Develop an algorithm which takes account of expected possible situations

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ELEMENT	PERFORMANCE CRITERIA
	1.5 Develop an algorithm which is guaranteed to end 1.6 Use structure, sequence, selection and iteration
2. Create code	2.1 Select appropriate scripting language 2.2 Demonstrate understanding and application of basic language syntax rules and best practices 2.3 Select and use language data types, operators and expressions to create clear and concise code 2.4 Use techniques of selection, iteration and sequence to control script execution flow 2.5 Use techniques for sequential file input and output to retrieve and store information 2.6 Obtain and use user input to affect the operation of the script 2.7 Apply internal document principles to created code 2.8 Follow organisational guidelines for developing maintainable code when creating scripts 2.9 Adhere to coding standards when creating scripts
3. Use operating system tools	3.1 Use searching and sorting tools to select information from the logging output of operating system (OS) 3.2 Implement controls to ensure that where significant events occur, script creates and maintains a log of operations via operating system logging mechanism 3.3 Register and run scripts with OS scheduling facility
4. Test and debug code	4.1 Engineer, document and conduct simple tests to confirm code meets design specification 4.2 Identify areas that are not covered or are covered incorrectly in the script 4.3 Take action to ensure that code complies with security policy 4.4 Take action to ensure that code operates with proper permissions 4.5 Use script debugging techniques suitable for use with scripting language to detect and resolve errors of syntactical, logical and design origin
5. Document script	5.1 Create technical-level documentation

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ELEMENT	PERFORMANCE CRITERIA
	5.2 Create user-level documentation

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	2.8, 2.9, 4.3	• Recognises and interprets technical material, organisational policy and regulatory information to determine job requirements
Writing	2.7, 3.2, 4.1, 5.1, 5.2	• Prepares user, peer and technical documentation that communicates complex information clearly and effectively
Oral Communication	1.1, 2.6	• Uses listening and questioning skills to confirm understanding for requirements, participates in a verbal exchange of ideas/solutions and uses appropriate, detailed and clear language to address key personnel and to disseminate information
Navigate the world of work	2.8, 2.9, 4.3	• Recognises and follows explicit protocols and meets expectations associated with own role
Numeracy	1.3-1.5, 2.3	• Creates complex algorithms to calculate and process data for code creation
Get the work done	1.2, 2.1-2.5, 2.8, 3.1-3.3, 4.1, 4.2, 4.4, 4.5	• Uses logical planning processes and an increasingly intuitive understanding of context to identify relevant information to plan business requirements • Reflects on the ways in which digital systems and tools are used, or could be used, to achieve work goals and begins to recognise strategic and operational applications • Understands the key principles and concepts underpinning the design and operation of digital systems and tools, and applies these when troubleshooting existing technology • Seeks advice and feedback from client when making decisions • Applies formal problem solving processes when tackling an unfamiliar problem, breaking complex

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		issues into manageable parts and identifying and evaluating options

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNWK409 Create scripts for networking	ICANWK409A Create scripts for networking	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK409 Create scripts for networking

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- develop an algorithmic statement of a solution for a set process
- design, document, construct and test a small single purpose operating system (OS) utility application in response to a problem description
- create scripted programs that access information stored in files on the system and use system utility programs to sort or find information within these files
- validate and record script results.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- summarise the principles of algorithm design
- identify and describe operating system components and processes, including:
  - command line interface
  - log files
  - program scheduling utilities
  - development methodologies
  - tools and utilities
  - testing methods
- explain debugging for a variety of scripting scenarios
- outline programming structured control constructs: sequence, selection and iteration
- summarise scripting techniques and language syntax.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the network industry, and include access to:

- technical requirements
- software development environment
- software testing environment.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK410 Install hardware to a network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to plan, manage and install new hardware components in a network.

It applies to individuals employed in technical information and communications technology (ICT) support roles, such as network administrators, who support network hardware in a peer-to-peer or client-server networked environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine network hardware requirements	1.1 Assess client network hardware and cabling requirements, considering compatibility with existing application software and operating system 1.2 Analyse requirements against local area network (LAN), wide area network (WAN), wireless networks, and mobile equipment access design limitations and organisational guidelines 1.3 Evaluate client requirements according to organisational guidelines, corporate purchasing procedures, licensing

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ELEMENT	PERFORMANCE CRITERIA
	arrangements and budget
2. Obtain network hardware	2.1 Contact vendors and obtain technical specifications 2.2 Evaluate or test hardware according to client requirements and organisational guidelines 2.3 Document recommendations and provide copies to appropriate person 2.4 Determine and document licensing requirements and security issues 2.5 Acquire hardware according to recommendations and organisational procedures 2.6 Organise cabling infrastructure where required
3. Install network hardware	3.1 Conduct installation with minimal disruption to clients 3.2 Install hardware according to appropriate installation procedures 3.3 Configure and test the installation to ensure that it meets client needs
4. Provide instruction and support for installed products	4.1 Determine and document client instructions and needs 4.2 Provide one-to-one or group instruction to client and users as required 4.3 Obtain client evaluation and feedback to ensure that client requirements have been met

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.2, 2.2, 2.5	• Recognises and interprets licensing and security issues, technical information and organisational procedures to determine job requirements
Writing	2.4, 4.1	• Prepares information which incorporates evaluation of information and specialised and cohesive language in a format and style appropriate to a specific audience

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Oral Communication	2.1, 2.3, 4.1-4.3	• Uses listening and questioning skills to confirm understanding for requirements • Participates in regular verbal exchanges and uses appropriate, detailed and clear language to address key personnel and to disseminate information
Numeracy	1.3	• Uses mathematical formulas and calculations to estimate and plan costs according to business budgets
Navigate the world of work	1.2, 1.3, 2.4, 2.5	• Appreciates the implications of legal and regulatory responsibilities related to own work
Get the work done	1.1-1.3, 2.2, 2.5, 2.6, 3.1- 3.3	• Determines job priorities, resources and equipment, and works logically and systematically to maintain the continuity of network operations and business functions during network installation tasks • Understands the purposes, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine tasks • Recognises and responds to predictable routine problems related to own role in the immediate work context • Automatically implements standard procedures for routine decisions

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNWK410 Install hardware to a network	ICANWK410A Install hardware to a network	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK410 Install hardware to a network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- evaluate client user requirements and hardware installation
- install a range of network hardware by planning, managing and supporting the installation of new components in a network, according to organisational policies and procedures.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- summarise current industry, data and voice networking, security products, devices and procedures, including:
  - current industry accepted network protocols
  - organisational contracting procedures and responsibilities
  - system diagnostic software
- outline current industry accepted network hardware and software products
- explain hardware and software installation procedures
- describe local area network (LAN) capabilities and characteristics, such as network type, internet protocol (IP) addressing, switch or hub operation
- describe various features of network connections, including types of cables, cabling distance limitations and wireless connections
- outline operating systems sufficient to enable basic installation
- summarise set-up and configuration procedures
- describe software packages supported by the organisation.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the network industry, and include access to:

- vendor hardware and software components
- application software and operating system
- hardware maintenance tools
- a live network
- networked computers
- organisational guidelines
- technical documentation and installation manuals.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK411 Deploy software to networked computers

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to plan, manage and support the installation of new or upgraded software to networked computers according to vendor and organisation specifications.

It applies to individuals involved in installing, configuring, maintaining and supporting software, such as network administrators and network support staff.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine operating system and software and hardware requirements	1.1 Assess client software and licensing requirements, considering compatibility with existing application software and operating system 1.2 Assess hardware requirements 1.3 Analyse requirements against local area network (LAN), wide area network (WAN), and wireless networks within organisational guidelines 1.4 Evaluate client requirements according to organisational

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ELEMENT	PERFORMANCE CRITERIA
	guidelines, corporate purchasing procedures and budget
2. Obtain deployment software to automate deployment	2.1 Evaluate deployment software according to client requirements and organisational guidelines 2.2 Contact vendors and obtain technical specifications, including support arrangements and licensing 2.3 Acquire software and licences according to organisational procedures 2.4 Store software licences and manuals according to organisational guidelines
3. Automate installation of operating system via network	3.1 Plan and deploy operating system according to appropriate vendor installation procedures, with minimal disruption to network and clients 3.2 Configure and test installation to ensure that it meets client needs and vendor specifications 3.3 Install updates and patches
4. Automate installation of software packages via network	4.1 Plan and deploy software packages according to appropriate vendor installation procedures, with minimal disruption to network and clients 4.2 Configure and test installation to ensure that it meets client needs and vendor specifications 4.3 Install updates and patches
5. Test and sign off	5.1 Test installed operating system and software for error-free performance, identifying and resolving problems 5.2 Determine and document security and licensing issues 5.3 Obtain client evaluation and feedback to ensure that client requirements have been met

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.4, 2.1, 2.3, 2.4,	• Recognises and interprets technical, licensing

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	3.1, 3.2, 4.1, 4.2	and organisational information to determine business requirements
Writing	1.3, 5.2	• Develops material for a specific audience, using clear and detailed language in order to convey explicit information
Oral Communication	2.2, 5.3	• Uses active listening, observational and questioning techniques in order to identify information and confirm, clarify or revise understanding • Uses specific and relevant language to obtain information to determine job requirements
Numeracy	1.4	• Uses mathematical formulas and calculations to estimate and plan costs according to business budgets
Navigate the world of work	1.1, 1.3, 1.4, 2.1-2.4, 5.2	• Appreciates the implications of legal and regulatory responsibilities related to own work
Get the work done	1.1-1.4, 2.1, 2.3, 2.4, 3.1-3.3, 4.1-4.3, 5.1	• Determines job priorities, resources and equipment, and works logically and systematically • Understands the purposes, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine tasks • Uses analytical processes to respond to deployment and configuration issues in the immediate work context • Automatically implements standard procedures for routine decisions

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNWK411 Deploy software to networked computers	ICANWK411A Deploy software to networked computers	Updated to meet Standards for Training Packages	Equivalent unit

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Links

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Assessment Requirements for ICTNWK411 Deploy software to networked computers

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- identify client software requirements
- plan and deploy automatic installation of operating system and software
- configure and test installation, ensuring client needs are met.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- summarise network protocols and operating systems, including:
  - transmission control protocols (TCP)
  - internet protocols (IPs)
  - network applications
- describe organisational contracting procedures and responsibilities
- outline software licensing requirements and documentation
- explain current industry standards related to software deployment, including:
  - deployment software configuration
  - configuration of automated deployment processes
  - operating system deployment
  - software package deployment
  - troubleshooting deployment processes.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the network industry, and include access to:

- a site or prototype where deployment processes may be implemented
- a live network
- software tools to support implementation of deployment processes
- technical documentation and installation manuals
- organisational guidelines.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK416 Build security into virtual private networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to build security into a virtual private network (VPN).

It applies to individuals with competent information and communications technology (ICT) skills and who are working in the network area and are required to ensure that VPNs contain required security.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Configure router to provide for network security monitoring and management	1.1 Create and apply audit rules consistent with policies, standards, protocols and management systems 1.2 Configure router to provide appropriate level of asset security and monitoring of security consistent with commercial and business requirements 1.3 Monitor and manage system to assess the level of security and attempts to breach security of framework components 1.4 Employ appropriate hardware and software to monitor and

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ELEMENT	PERFORMANCE CRITERIA
	address security issues and provide VPN solutions
2. Secure a site-to-site VPN	2.1 Configure internet key exchange (IKE) and internet protocol security (IPSec) 2.2 Configure site-to-site IPSec VPN using pre-shared keys 2.3 Configure site-to-site IPSec VPN using digital certificates
3. Secure a remote access VPN	3.1 Configure a VPN server 3.2 Install and administer a router management console 3.3 Develop documentation on current system settings and framework components, and file securely for future reference

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1	• Gathers, interprets and analyses current industry rules from a range of sources and identifies relevant and key information
Writing	1.1, 3.3	• Prepares workplace documentation that incorporates an evaluation of information and specialised and cohesive language in a format and style appropriate to a specific audience
Navigate the world of work	1.1	• Recognises and follows explicit and implicit protocols, and meets expectations associated with own role
Get the work done	1.2-1.4, 2.1-2.3, 3.1-3.3	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context to identify relevant information and risks • Understands the importance of secure information in relation to own work and takes personal responsibility for identifying and managing risk • Understands the purposes, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine tasks • Initiates standard procedures when responding to

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		familiar problems within the immediate context

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNWK416 Build security into virtual private networks	ICANWK416A Build security into virtual private networks	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK416 Build security into virtual private networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- configure a router to provide the required security
- implement and maintain security functionality for a virtual private network (VPN), including:
  - site to site VPN
  - remote access VPN
- produce security documentation.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline the characteristics of a VPN system, including:
  - site to site
  - remote access systems
  - network protocols and operating systems relevant to VPN, including its features, issues and functions
- describe the security requirements for a VPN, including:
  - auditing and penetration testing techniques
  - configuration of routers and switches
  - security protocols, standards and data encryption
  - processes and techniques related to security perimeters and their functions
  - security threats, including eavesdropping, data interception, data corruption and data falsification

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    - transmission control protocol or internet protocol (TCP/IP) protocols and applications audit and intrusion detection systems
    - authentication issues
- recognise and describe the differences between common networks, including:
    - local area network (LAN)
    - wireless local area network (WLAN)
    - wide area networks (WAN)
- identify and describe organisational issues surrounding:
    - security cryptography
    - screened subnets
    - virus detection software.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the network industry, and include access to:

- network technical requirements
- network infrastructure, including servers and security hardware and software.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK417 Build an enterprise wireless network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to build an enterprise, community or mesh wireless network within and outside buildings.

It applies to individuals with excellent task management, interpersonal and information and communications technology (ICT) skills working in senior design roles in the networking area, who are required to develop complex wireless networks for organisations.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Confirm client requirements and network equipment required	1.1 Identify and clarify organisational requirements of the client 1.2 Evaluate client requirements along with business needs in order to translate into technical requirements 1.3 Review existing network design documentation to ensure it is authorised, current and complete 1.4 Identify network topology 1.5 Identify the components required to be installed to meet the

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ELEMENT	PERFORMANCE CRITERIA
	technical requirements 1.6 Contact vendors and service suppliers to obtain specifications and availability of identified components 1.7 Ensure preliminary work is completed within the required timeframe
2. Prepare for installation	2.1 Ensure client and users are aware of date and time of installation 2.2 Gather, prepare and check installation and safety equipment 2.3 Assess on-site safety arrangements for installers and users
3. Select, install and configure access points and other wireless devices	3.1 Select appropriate hardware based on identified components 3.2 Install and configure hardware to provide wireless access to network 3.3 Ensure connections are secured against intrusion or data access by unauthorised persons, are safe for users, and are protected from the environment 3.4 Configure security, monitoring, logging and quality of service features consistent with standards and protocols 3.5 Ensure test equipment is calibrated 3.6 Test wireless network systems performance and verify that it meets enterprise requirements and is consistent with standards and protocols
4. Select, install and configure antennas	4.1 Select appropriate antennas based on design plan 4.2 Safely install and configure antennas to provide wireless access to network 4.3 Measure and assess signal strength within and outside building 4.4 Resolve and report radio frequency interference issues
5. Select, install and configure antennas	5.1 Identify possible security threats to assets 5.2 Configure client server and helper security devices 5.3 Configure associations and filters
6. Train users	6.1 Provide training for users to establish and manage network connections 6.2 Resolve pairing and log-on difficulties for users 6.3 Inform users of wireless network etiquette and traffic

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ELEMENT	PERFORMANCE CRITERIA
	capacity issues 6.4 Advise users of help desk contact details
7. Monitor and administer wireless network	7.1 Monitor wireless network performance using diagnostic tools, including appropriate software 7.2 Debug networking issues to maintain trouble-free wireless connection 7.3 Document current settings and store securely, consistent with commercial and business requirements
8. Finalise build process	8.1 Review network for performance issues, planned maintenance or upgrade requirements 8.2 Report to client with network documentation and recommendations for performance issues 8.3 File documentation according to organisational guidelines

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.2, 1.3, 1.5, 3.4, 3.6, 4.1, 8.3	• Gathers, interprets and analyses information from a range of sources and identifies relevant and key information
Writing	4.4, 7.3	• Prepares workplace documentation that incorporates an evaluation of information and specialised language in a format and style appropriate to a specific audience
Oral Communication	1.1, 1.2, 1.6, 2.1, 4.4, 6.1, 6.3, 6.4, 8.2	• Uses active listening and observational and questioning techniques to identify information and confirm, clarify or revise understanding • Articulates requirements and strategies clearly and distinctively, using technical language appropriate to audience and environment
Numeracy	3.5, 4.3	• Interprets numerical information to calibrate equipment and measure and assess signal strength

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Navigate the world of work	8.3	• Complies with explicit organisational policies and procedures
Interact with others	6.1, 6.3, 6.4, 8.2	• Recognises and applies the protocols governing what to communicate, with whom and how in a range of different contexts
Get the work done	1.4, 1.5, 1.7, 2.2, 2.3, 3.1-3.6, 4.1, 4.2, 4.4, 5.1-5.3, 6.2, 7.1-7.3, 8.1, 8.3	• Uses a combination of formal, logical planning processes to ensure work is completed according to time constraints and an increasingly intuitive understanding of context to identify relevant information and risks • Understands the importance of secure information in relation to own work and takes personal responsibility for identifying and managing risk • Understands the purposes, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine tasks • Initiates standard procedures when solving a broad range of ICT problems • Uses familiar digital systems and tools to access, organise, analyse and store information

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNWK417 Build an enterprise wireless network	ICANWK417A Build an enterprise wireless network	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK417 Build an enterprise wireless network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- confirm client organisational and business requirements
- determine hardware and software requirements
- prepare for safe installation
- select, install and configure required wireless hardware
- train users
- test, monitor, and administer the installation
- finalise installation and prepare required documents documentation.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- Identify and describe current wireless local area network (WLAN) and wireless area network (WAN) solutions, including:
  - audit and intrusion detection systems
  - auditing and penetration testing techniques
  - bandwidth and quality of service
  - factors affecting signal quality
  - layer 2 and layer 3 design issues
  - suitability for small office home office (SOHO) and enterprise local area networks (LANs)
  - transmission control protocols or internet protocols (TCPs/IPs) and applications
  - wireless topologies

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- describe the common features of security threats and how to develop a security strategy, including:
  - security protocols
  - standards
  - data encryption
- identify and describe common network protocols and operating systems.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the network industry, and include access to:

- technical requirements
- network infrastructure, including wireless hardware and software.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK419 Identify and use current virtualisation technologies

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to use virtualisation technology, according to the industry standards for reviewing and demonstrating work processes, skills and techniques to ensure that the quality of the entire business process is maintained at the highest level possible through the appropriate application of virtualisation technology.

This unit applies to individuals engaged in ongoing review and research who review, and maintain, business processes at the highest level possible.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to use virtualisation technologies	1.1 Identify the enterprise requirements, and determine the need for desktop virtualisation software 1.2 Identify the virtualisation vendors and the different types of virtualisation technology that they offer 1.3 Identify, review and select the desktop virtualisation software, where appropriate

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Select suitable desktop virtualisation software
2. Use desktop virtualisation software to assist in solving organisational problems	2.1 Test the desktop virtualisation software 2.2 Use the features and functions of desktop virtualisation software in an organisational context, in line with environmental factors 2.3 Demonstrate an in-depth of knowledge of desktop virtualisation technologies, to an accepted industry standard 2.4 Access and use, the sources of information relating to desktop virtualisation technology
3. Evaluate the desktop virtualisation software performance	3.1 Review the effect of desktop virtualisation software on benefits to the enterprise 3.2 Seek feedback from users, where appropriate, and update the desktop

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 1.3, 1.4, 2.4, 3.1	• Critically analyses documentation from a variety of sources and records, and consolidates information, to determine requirements
Writing	3.2	• Writes, edits and proofreads documents to ensure clarity of meaning, and the accuracy and consistency of information
Oral Communication	3.2	• Uses specific and relevant language to clearly describe and explain, a range of technical, operational and business-related matters, with internal and external personnel
Navigate the world of work	1.1, 2.2	• Identifies, and acts on, issues that contravene relevant policies, procedures and legal requirements • Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements
Interact with	3.2	• Selects and uses, the appropriate conventions and protocols when communicating with clients and

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others		co-workers, in a range of work contexts
Get the work done	1.1-1.4, 2.1, 2.2, 2.3, 3.1	• Takes responsibility for planning, sequencing and prioritising tasks and own workload, for efficiency and effective outcomes • Makes routine decisions and implements standard procedures for routine tasks, using formal decision-making processes, for more complex and non-routine situations • Contributes to the continuous improvement of current work practices, by applying basic principles of analytical and lateral thinking

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNWK419 Identify and use current virtualisation technologies	ICANWK419A Identify and use current virtualisation technologies	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK419 Identify and use current virtualisation technologies

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- identify current new, and emerging, virtualisation technology
- identify and use, the features and functions of industry-specific virtualisation technologies
- review and evaluate the virtualisation software.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe current technology trends, and directions, in information and communications technology (ICT), specifically in the major industry technology standards used in virtualisation technology
- recognise the vendor product directions relating to virtualisation technology
- outline current industry hardware and software products, and their general features, capabilities and application
- recognise information-gathering techniques
- describe the environmental and sustainability policies of the workplace
- identify the features of virtualisation technology
- recognise how to test, and evaluate, virtualisation technology
- locate the appropriate sources of information regarding virtualisation technology.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the network industry, and include access to:

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- a site where industry-specific technologies may be used
- industry-specific technologies currently used in the industry
- documents detailing work health and safety (WHS) standards, environmental guidelines, and enterprise requirements
- the virtualisation software.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK420 Install and configure virtual machines

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Application

This unit describes the skills and knowledge required to select and implement virtualisation solutions to meet organisational needs in an information and communications technology (ICT) environment.

It applies to individuals who work in the network area of organisations and are responsible for the virtualisation of desktop and server operating systems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify options and select virtualisation solution	1.1 Research and determine government and industry guidelines and policies for use of desktop and server virtualisation 1.2 Determine and document current and future requirements of organisations based on guidelines, policies and organisational structure 1.3 Identify benefits and detriments of virtualisation of desktop and server environments relevant to needs of organisation 1.4 Identify available features of current virtualisation software

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	relevant to needs of organisation 1.5 Select virtualisation solutions based on current and future needs of organisation 1.6 Seek and obtain feedback on selected virtualisation solution from organisation and incorporate feedback into selected virtualisation solutions
2. Prepare for, install and configure virtualisation technology	2.1 Identify, clarify and document technical requirements of organisation relating to virtualisation technologies including virtual machines, virtual networks, and virtualisation software 2.2 Identify and document hardware, software, network, and infrastructure components required to be installed and configured to meet technical requirements 2.3 Seek and obtain feedback on technical requirements and documented components from organisation and incorporate feedback into technical requirements and documented components 2.4 Install and configure software to provide support for virtualisation of desktop and server operating systems according to technical requirements 2.5 Configure virtualisation software application features to accommodate required functionality according to organisational needs
3. Install, configure and test virtual machines	3.1 Install and configure virtual machines according to technical requirements 3.2 Install and configure virtual networks according to technical requirements 3.3 Test functionality of installed virtual machines and virtual networks against technical requirements and rectify errors

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	**Description**
Reading	• Recognises and interprets industry and government guidelines to determine organisational requirements
Oral Communication	• Elicits information and organisational needs by using listening and questioning techniques

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Navigate the world of work	• Complies with explicit organisational policies and procedures
Get the work done	• Determines job priorities, resources and equipment, and works logically and systematically to undertake clearly defined and familiar tasks • Takes responsibility for routine decision making by selecting from a range of predetermined options in routine situations, identifying and taking some situational factors into account • Initiates standard procedures when adapting configuration procedures, depending on differing operational contingencies, risk situations and environments • Understands key principles and concepts underpinning the design and operation of digital systems and tools, and applies these when troubleshooting existing technology and when seeking to understand the potential impact of new technology • In familiar contexts, responds promptly and intuitively to problems involving virtualised machine environments requiring immediate attention

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNWK420 Install and configure virtual machines	ICTNWK402 Install and configure virtual machines for sustainable IT	Edits to elements and assessment requirements to clarify intent. Typographical edit to title to clarify intent of unit.	Equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK420 Install and configure virtual machines

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements and performance criteria of this unit; including evidence of the ability to:

- Identify one virtualisation solution for the organisation including the identification of applicable guidelines or policies, benefits and detriments and currently available software
- Interpret organisational needs to determine technical requirements of virtualisation solution once
- Install and configure virtualisation software to accommodate organisational needs once
- Install, configure, and test the functionality of two virtual machines, including evidence of the ability to:
  - backup virtual machine state on shutdown
  - restore virtual machine state on start up
  - backup and restore a virtual hard drive and software configuration files for virtual machine
- Configure and test the functionality of a virtual network for the two virtual machines, including the ability to:
  - configure internet protocol (IP) addresses to match selected network configuration
  - configure virtual network as host only, bridged, and network address translation (NAT) configurations
  - configure services to operate under current network configuration

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

- Government and industry policies and guidelines related to virtualisation
- Technologies and processes relating to virtualisation
- Tools and software applications for virtual machine management
- Configuration of software applications required to manage virtual machines

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- Configuration requirements for the integration of virtual machines into an existing network design

Assessment Conditions

Skills must be demonstrated in a workplace or simulated environment where conditions are typical of those in an ICT working environment or ICT workplace. This includes:

- Site or prototype where virtual machine environments are to be implemented
- Information relating to organisational policies and procedures and structures
- Current and future user needs relating to desktop and server environments
- Network technical requirements
- Networked computers
- Individual user to clarify and confirm requirements
- Software to support implementation of virtual machines.

Assessors of this unit must satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK421 Install, configure and test network security

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Application

This unit describes the skills and knowledge required to install, configure and test network security in an organisational environment.

It applies to individuals who are involved in the installation, configuration, and testing of network security for networks of any size in job roles including network administrator, penetration tester, and security consultant.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Assess network security threats and vulnerabilities	1.1 Review current system security against organisational asset security requirements to identify security threats and vulnerabilities 1.2 Analyse network, software, hardware and system security threats and vulnerabilities to prioritise deficiencies to be addressed 1.3 Make recommendations to management to address security deficiencies according to organisational asset security

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	requirements
2. Implement countermeasures for identified threats and vulnerabilities	2.1 Implement required level of perimeter security to meet organisational asset security requirements and according to identified threats and vulnerabilities 2.2 Assess and implement server and network hardening techniques and measures 2.3 Implement secure authentication and user account controls to secure data integrity and transmission
3. Test and verify functionality and performance of countermeasures implemented	3.1 Design function and performance test items to verify key functions and performance of countermeasures 3.2 Conduct function and performance tests to modify and debug countermeasures 3.3 Develop documentation on the current system settings and file according to organisational guidelines
4. Maintain and improve network security	4.1 Review logs and audit reports to identify and record security incidents, intrusions and attempts 4.2 Carry out spot checks and audits to ensure that procedures are not being bypassed 4.3 Document newly discovered security threats vulnerabilities and recommendations in a report for presentation to superior to gain approval recommendations to be implemented

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	**Description**
Reading	• Recognises and interprets textual information to determine specific information about security incidents
Writing	• Accurately records test results and develops material for a specific audience, using clear and detailed language in order to convey explicit information
Oral Communication	• Articulates information clearly, using specific and relevant language suitable to audience to convey recommendations and provide verbal reports • Uses listening and questioning techniques to confirm understanding

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Numeracy	• Extracts and evaluates the mathematical information embedded in tasks and texts
Get the work done	• Determines job priorities, resources and equipment, and works logically and systematically to undertake clearly defined and familiar tasks • Understands the purposes, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine tasks • Recognises and responds to predictable routine problems related to own role in the immediate work context, including detecting intrusion and debugging the system when required

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNWK421 Install, configure and test network security	ICTNWK406 Install, configure and test network security	Edits to application to clarify intent and scope. Edits to elements 1–4 and assessment requirements to clarify intent. Edits to foundation skills to align with unit elements.	Equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK421 Install, configure and test network security

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements and performance criteria of this unit; including evidence of the ability to:

- With respect to one network:
  - identify and analyse network security threats and vulnerabilities
  - make recommendations to management to address network security deficiencies and fulfil organisational asset security requirements
  - implement perimeter security, network hardening measures and authentication and user account controls according to identified deficiencies and organisational asset security requirements
  - design and conduct testing to verify the key function and performance measures of network security
  - debug network security according to test results
  - review logs and audit reports to identify and record five security incidents, intrusions and attempts
  - undertake three spot checks and audits to ensure that procedures are not being bypassed
  -

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

- Security requirements of the organisation, including:
  - organisational structure and functions
  - features and capabilities of networking technologies
  - privacy issues and privacy legislation
  - security information sources
  - risk analysis

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- Virtual private network (VPN) issues, including bandwidth and dynamic security environment
- Configuration of routers and switches
- Current hardware and software security products, including general features and capabilities
- Function and operation of VPN concepts including encryption, firewalls, packet tunnelling, and authentication
- Network protocols and operating systems
- Security perimeters and functions
- Security protocols, standards and data encryption
- Security threats including eavesdropping, data interception, data corruption and data falsification
- Types of VPNs including site-to-site and user-to-site internet traffic and extranets
- Systems and procedures related to:
  - audit and intrusion detection systems
  - auditing and penetration testing techniques
  - cryptography
  - local area network (LAN), wireless local area network (WLAN) and wide area network (WAN)
  - screened subnets
  - transmission control protocol, internet protocol (TCPs/IPs), and applications
  - virus detection software

Assessment Conditions

Skills must be demonstrated in a workplace or simulated environment where conditions are typical of those in an ICT working environment or ICT workplace. This includes:

- Site where secure network installation, configuration, and monitoring may be conducted
- Network security documentation
- Organisational asset security requirements and information on organisational structure and functions
- Equipment specifications
- Network components
- Testing software
- Individual manager in the organisation
- Firewalls (hardware and software)
- Live network
- Networked (LAN) computers
- WAN service point of presence

Assessors of this unit must satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

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Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK502 Implement secure encryption technologies

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to ensure secure file encryption is selected, implemented and monitored on a computer network or local environment.

It applies to individuals working as information and communications technology (ICT) professionals who may select, implement and monitor a secure encryption environment in any size enterprise.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine encryption methods	1.1 Analyse enterprise data security requirements 1.2 Create a new or review an existing security plan to determine appropriate encryption methods 1.3 Review a range of encryption technologies and rank the most appropriate options 1.4 Assess the costs associated with each encryption option 1.5 Document encryption options and costs, and forward to

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ELEMENT	PERFORMANCE CRITERIA
	appropriate person for decision
2. Implement encryption	2.1 Apply encryption technologies to the enterprise system 2.2 Analyse effect of encryption technologies on user roles and responsibilities 2.3 Inform user of new encryption technologies and the effect it has on their responsibilities
3. Monitor encryption	3.1 Analyse implementation of the encryption technologies, confirming function and performance 3.2 Review help desk records for problems concerning implementation and take appropriate action 3.3 Review system logs for encryption issues and compromises 3.4 Document encryption issues and compromises, and notify appropriate person

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 3.2	• Gathers, interprets and analyses technical data to determine security requirements and help desk records to interpret technical compromises
Writing	1.1, 1.3, 1.5, 3.4	• Prepares workplace documentation that incorporates an evaluation of technical information and specialised and cohesive language in a format and style appropriate to a specific audience
Oral Communication	2.3, 3.4	• Articulates requirements and responsibilities clearly and distinctively, using technical language appropriate to audience and environment
Numeracy	1.4	• Uses mathematical formulas and calculations to undertake a cost-benefit analysis
Navigate the world of work	1.1	• Recognises and follows explicit and implicit protocols, and meets expectations associated with own role
Interact with	1.5	• Selects the appropriate form, channel and mode of

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others		communication for a specific purpose relevant to own role
Get the work done	1.3, 2.1, 2.2, 3.1-3.3	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context to determine data security threats, risks and countermeasures • Manages and maintains data securely and actively monitors technology, notifying others if security becomes compromised • Understands the purposes, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine tasks • Initiates standard procedures when responding to familiar problems to troubleshoot, debug and correct connectivity and security issues

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNWK502 Implement secure encryption technologies	ICANWK502A Implement secure encryption technologies	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK502 Implement secure encryption technologies

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- analyse enterprise data security requirements
- create or review existing security plan to determine the appropriate encryption methods
- rank and document appropriate encryption methods
- implement encryption systems and inform users of any impacts
- monitor and document encryption issues and compromises, and notify appropriate person.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain certificate related infrastructure (certificate authorities, registration authorities, repository services)
- summarise common asymmetric key algorithms and their usage
- explain common symmetric key algorithms and their usage, such as:
  - advanced encryption standard (AES)
  - data encryption standard (DES)
  - triple data encryption algorithm (triple DES)
  - Blowfish
- explain encryption strength
- summarise various encryption types, including public key, secret key, hash key
- summarise the functions and features of:
  - access control permissions
  - digital signatures
  - symmetric encryption, asymmetric encryption and one-way encryption

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  - timestamps
- explain one-way message digests, such as message digest algorithm 5 (MD5) and secure hash algorithm (SHA)
- explain public key infrastructure (PKI), pretty good privacy (PGP) and GNU Privacy Guard (GnuPG)
- outline replay security
- outline possible sources of security threats, including eavesdropping, data interception, data corruption, data falsification and authentication issues
- explain transmission control protocol or internet protocol (TCP/IP) protocols and applications
- summarise security problems and challenges that arise from organisational issues
- outline wired equivalent privacy (WEP), Wi-Fi protected access (WPA) and Wi-Fi protected access 2 (WPA2).

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the network industry, and include access to:

- a site where encryption installation may be conducted
- a live network
- servers
- encryption software
- encryption tools.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK503 Install and maintain valid authentication processes

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to design, develop, install and maintain authentication processes to reduce the vulnerability of the system.

It applies to individuals working as middle managers such as information security managers, network engineers or security analysts, who are responsible for implementing and monitoring the organisational security management system.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine authentication requirements	1.1 Determine user and enterprise security requirements with reference to enterprise security plan 1.2 Identify and analyse authentication options according to user and enterprise requirements 1.3 Select the most appropriate authentication and authorisation processes
2. Configure	2.1 Create an authentication realm and reuse as required to

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ELEMENT	PERFORMANCE CRITERIA
authentication software or tools	protect different areas of server 2.2 Add users and authorisation rules to new realm according to business needs 2.3 Describe user attributes and user attribute set-up 2.4 Set up an authentication filter and authorisation parameters on the appropriate server according to business requirements
3. Apply authentication methods	3.1 Develop or obtain authentication protocols as required 3.2 Develop and distribute related methods to users according to business need 3.3 Brief user on authentication system and their responsibilities according to enterprise security plan 3.4 Apply authentication system to network and user according to system product requirements 3.5 Record and store permission and configuration information in a secure central location
4. Monitor authentication system	4.1 Review the authentication system according to user and enterprise security and quality of service requirements 4.2 Ensure ongoing security monitoring, using incident management and reporting processes, according to enterprise security plan 4.3 Adjust authentication system if required

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 3.3, 4.2	• Gathers, interprets and analyses technical data to determine requirements according to user and enterprise plans
Writing	2.3, 3.1, 3.2, 3.5	• Prepares workplace documentation that incorporates an evaluation of technical information and specialised and cohesive language in a format and style appropriate for a specific audience

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Oral Communication	1.2, 3.1-3.3, 4.2	• Uses active listening, observational and questioning techniques in order to identify information and confirm, clarify or revise understanding • Initiates and contributes to a range of formal and informal conversations relevant to role, responding, clarifying, explaining and expanding on information as required
Navigate the world of work	1.1, 3.3	• Recognises and follows explicit and implicit protocols, and meets expectations associated with own role
Get the work done	1.1, 1.3, 2.1, 2.2, 2.4, 3.4, 3.5, 4.1-4.3	• Reflects on the ways in which digital systems and tools are used or could be used to achieve work goals and begins to recognise strategic and operational applications • Uses digital technologies and systems safely and securely when implementing and monitoring a system with a growing awareness of the permanence and transparency of all activities • Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context to plan control methods and systems processes • When dealing with complex issues such as authentication failure and security incidents may use intuition to identify the general problem area, switching to analytical processes to clarify goals and key issues and using lateral thinking processes to generate possible solutions • Makes decisions in relatively complex situations, taking a range of factors into consideration

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNWK503 Install and maintain valid authentication processes	ICANWK503A Install and maintain valid authentication processes	Updated to meet Standards for Training Packages	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK503 Install and maintain valid authentication processes

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- design and deploy authentications solutions to the business technology environment and business needs
- configure authentication software or tools
- monitor and test authentication process after implementation
- ensure authentication solutions are current.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- summarise the problems and challenges dealing with organisational authentication issues, including resource accounting through authentication
- discuss common virtual private network (VPN) issues, including:
  - quality of service (QoS) considerations
  - bandwidth
  - dynamic security environment
  - function and operation of VPN concepts
- outline authentication adaptors
- summarise biometric authentication adaptors
- summarise digital certificates, such as VeriSign, X.509, and SSL
- explain the function and operation of authentication controls including:
  - passwords
  - personal identification numbers (PINs)
  - smart cards

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  - biometric devices
  - other authentication protocols
- outline network authentication services, such as Kerberos and NT LAN Manager (NTLM)
- summarise the features of common password protocols, such as:
  - challenge handshake authentication protocol (CHAP)
  - challenge phrases
  - password authentication protocol (PAP)
  - remote authentication dial-in user service (RADIUS) authentication
- describe the principles of security tokens.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the network industry, and include access to:

- a site or prototype where network authentication may be implemented and managed
- network support tools currently used in industry
- organisational security policies related to authentication
- manufacturers recommendations
- current authentication standards, including biometric authentication adaptors.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK509 Design and implement a security perimeter for ICT networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to build a high performance, high security, failure resistant security perimeter, for an enterprise information and communications technology (ICT) network.

It applies to individuals with excellent ICT expertise who are working as middle managers, including information security managers, network engineers, network technicians and security analysts.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan and design firewall solution	1.1 Determine level and nature of security needed to meet enterprise requirements 1.2 Identify security threats 1.3 Research available perimeter security options 1.4 Design security perimeter to meet identified enterprise

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ELEMENT	PERFORMANCE CRITERIA
	requirements
2. Configure perimeter to secure network	2.1 Deploy perimeter devices according to design 2.2 Configure perimeter topology 2.3 Configure basic functionality of devices to allow access 2.4 Configure advanced functions
3. Plan, design and configure network devices to provide secure fallover and redundancy	3.1 Back up device configuration 3.2 Design and configure perimeter to enable continuity of service during upgrade of devices 3.3 Design and configure perimeter to enable continuity of service in the event of device failure
4. Plan, design and configure a VPN solution	4.1 Configure perimeter for site-to-site virtual private networks (VPNs) 4.2 Configure perimeter as a remote access VPN server 4.3 Configure perimeter to allow VPN tunnel forwarding 4.4 Diagnose and resolve VPN connectivity issues
5. Test and verify design performance	5.1 Test functionality of basic features 5.2 Test functionality of advanced features 5.3 Perform penetration testing to verify that the perimeter meets security requirements 5.4 Monitor perimeter device performance 5.5 Monitor security breaches 5.6 Document test results and report to appropriate person

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.3, 1.4	• Gathers, interprets and analyses technical and enterprise information to determine requirements according to client needs

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Writing	1.4, 3.2, 3.3, 5.6	• Uses factual information and industry related terminology to convey complex technical information, and notes security breaches for client records to clients on technical, operational and business related matters
Oral Communication	1.1, 5.6	• Uses active listening, observational and questioning techniques in order to identify information and confirm, clarify or revise understanding • Reports test results clearly and distinctively, using technical language appropriate to audience and environment
Numeracy	2.3, 2.4, 3.2, 3.3, 4.1-4.3, 5.3	• Selects from and applies an expanding range of mathematical and problem solving strategies to design and configure advanced features of perimeter devices and an integrated VPN solution
Get the work done	1.1, 1.2, 2.1-2.4, 3.1-3.3, 4.1-4.4, 5.1- 5.5	• Reflects on the ways in which digital systems and tools are used or could be used to achieve work goals, and begins to recognise strategic and operational applications • Uses digital technologies and systems safely and securely when implementing and monitoring a system, with a growing awareness of the permanence and transparency of all activities • Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context to plan, prioritise and monitor own work, and coordinate processes in liaison with others • Makes decisions in relatively complex situations, taking a range of factors into consideration • When dealing with complex issues, may use intuition to identify the general problem area, switching to analytical processes to meet security requirements and resolve other technical problems

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNWK509 Design and implement a security	ICANWK509A Design and implement a security	Updated to meet Standards for	Equivalent unit

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Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
perimeter for ICT networks	perimeter for ICT networks	Training Packages	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK509 Design and implement a security perimeter for ICT networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- identify threats to perimeter security
- develop design for a secure perimeter
- deploy perimeter to meet security requirements
- design and configure advanced features of perimeter devices to provide additional services
- design and configure an integrated VPN solution
- conduct exhaustive testing of perimeter.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify and describe emerging security issues and the need for security policies
- describe the security perimeter issues related to networks, including:
  - auditing and penetration testing techniques
  - capabilities of software and hardware perimeter solutions
  - logging analysis techniques
  - organisational network infrastructure
  - security technologies according to perimeter design
  - weaknesses of installed perimeter design.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the network industry, and include access to:

- site or prototype where perimeter security may be implemented and managed
- perimeter devices
- organisational security requirements.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK516 Determine best-fit topology for a local network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to determine the most appropriate way of networking computers to meet user needs and business requirements.

It applies to individuals in senior networking roles who are required to plan the most appropriate topology for a proposed network.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine user needs	1.1 Identify the different segments of the proposed network based on business requirements 1.2 Determine segment needs, using network functional analysis 1.3 Estimate traffic content and volumes based on business requirements 1.4 Develop a prioritised organisational network functional matrix

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ELEMENT	PERFORMANCE CRITERIA
2. Develop local area network specification	2.1 Determine the resource requirements for each network segment on the basis of functional analysis 2.2 Analyse features of the physical environment for the effect on network design 2.3 Conduct a costing process for possible topology options 2.4 Consider topology options with reference to available resources and network functional matrix 2.5 Select and document appropriate network topology based on business requirements and functional analysis

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.3, 2.5	• Interprets textual information obtained from a range of sources and determines how content may be applied to organisational requirements
Writing	2.5	• Develops material for a specific audience, using clear and detailed language to convey explicit information, requirements and recommendations
Numeracy	1.3, 2.1, 2.3, 2.4	• Interprets numerical information and applies mathematical calculations to determine resource expenditure within predetermined constraints • Interprets numerical data to estimate traffic needs
Get the work done	1.1, 1.2, 1.4, 2.1, 2.2, 2.4, 2.5	• Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world • Uses digital tools to access and organise complex data and analyse multiple sources of information for strategic purposes • May operate from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation, and identifying and addressing issues

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Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNWK516 Determine best-fit topology for a local network	ICANWK516A Determine best-fit topology for a local network	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK516 Determine best-fit topology for a local network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- analyse business or organisational needs
- identify the most appropriate local area network (LAN), virtual private network (VPN) or wireless local area network (WLAN) topology
- document recommendations.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- summarise the typical network topologies for the following:
  - large and small LANs
  - wide area networks (WANs)
  - VPNs
  - virtual local area networks (VLANs)
  - WLANs
- identify and describe the typical components of a local network, including:
  - adaptor cards
  - bridges
  - Ethernet hardware
  - gateways
  - hubs
  - routers
- describe the software and programming requirements of a local network, including:

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  - security protocols
  - transmission control protocol or internet protocol (TCP/IP)
- describe the business consideration for establishing a local network including:
  - growth projections and capacity planning
  - costs and queuing constraints
  - high and low speed links
  - redundancy paths
  - response time and reliability requirements
  - scope of operation
  - traffic flow patterns
  - traffic load
  - application requirements of users
- outline of installation requirements for local area networks:
  - cabling, particularly unshielded twisted pair (UTP), shielded twisted pair (STP) or optic fibre
  - characteristics and relative strengths and weaknesses of LAN network topologies
  - features and capabilities of current industry accepted hardware and software products
  - features of line sharing protocols.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the network industry, and include access to:

- business requirements
- equipment specifications
- organisational and industry costing.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK517 Determine best-fit topology for a wide area network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to identify the best way computers and local area networks (LANs) can be connected to make a wide area network (WAN).

It applies to individuals with excellent planning and information and communications technology (ICT) skills in networking areas who are required to research and recommend the most appropriate topology for a WAN.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify WAN needs	1.1 Identify the different LAN, wireless local area network (WLAN) or virtual private network (VPN) segments of the proposed WAN 1.2 Determine segment needs using functional analysis 1.3 Estimate traffic content and volumes according to expected organisational usage, by examining telecommunications infrastructure

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Develop an organisational WAN functional matrix
2. Create WAN specification	2.1 Determine resource requirements for each LAN, WLAN or VPN segment on the basis of functional analysis 2.2 Consider and report how features of the physical environment affect WAN design 2.3 Choose a WAN service appropriate to the amount and type of traffic expected to access the WAN 2.4 Include redundant links in the proposed WAN connectivity for link backup purposes, in case the main link is disrupted 2.5 Document appropriate WAN service

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Writing	2.2, 2.5	• Develops material for a specific audience, using clear and detailed language to convey explicit information, requirements and recommendations
Numeracy	1.3, 1.4	• Undertakes complex functional calculus to develop a WAN functional matrix • Interprets numerical data to estimate traffic needs and calculate business expenses
Get the work done	1.1-1.3, 2.1-2.4	• Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world • Uses digital tools to access and organise complex data and analyse multiple sources of information for strategic purposes • May operate from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation, and identifying and addressing issues with reference to resource constraints

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Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNWK517 Determine best-fit topology for a wide area network	ICANWK517A Determine best-fit topology for a wide area network	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK517 Determine best-fit topology for a wide area network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- consider budget constraints and business needs
- identify the configuration for connecting a local area network (LAN), wireless local area network (WLAN) or virtual private network (VPN) into a wide area network (WAN)
- document the configuration.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- summarise the typical network topologies for the following networks:
  - large and small LANs
  - WANs
  - VPNs
  - virtual local area networks (VLANs)
  - WLANs
- identify and describe the typical components and technologies required for a WAN, including:
  - concepts and types of modems
  - internet protocol (IP) addressing
  - packet switching
  - routed or routable protocols, including IP, IPX and AppleTalk
  - router operations, including double data rate (DDR)
  - routing protocols, including routing information protocol (RIP), enhanced interior gateway routing protocol (EIGRP) and open shortest path first (OSPF)

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  - transmission control protocols or internet protocols (TCPs/IPs)
  - relationship of asynchronous and synchronous communication
  - use of microwave and satellite communication in networking
- describe the business consideration for establishing a WAN, including:
  - constraints and costs
  - features of telecommunications infrastructure, including the difference between digital and analogue networks
  - growth projections and capacity planning
  - high or low speed links
  - protocols
  - redundancy paths
  - response time and reliability requirements
  - scope of operation
  - security
  - traffic flow patterns
  - traffic load
  - users and the applications expected.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the network industry, and include access to:

- design documents relating to LANs to be incorporated into the WAN
- equipment specifications
- vendor product catalogues and costs.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK518 Design an enterprise wireless local area network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to conduct an internal and outdoor site survey, and design a complex wireless local area network (WLAN).

It applies to individuals working in the networking area who are required to evaluate client requirements and design an appropriate WLAN.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Document current network configuration	1.1 Obtain details of current network layout and parameters 1.2 Hold consultations with key stakeholders 1.3 Document the current network configuration, network topology and links to carrier
2. Research client needs	2.1 Identify the client's current needs 2.2 Determine future needs 2.3 Document current and future needs according to

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ELEMENT	PERFORMANCE CRITERIA
	organisational requirements
3. Implement site survey	3.1 Select the appropriate diagnostic tools and measurement processes 3.2 Select test equipment and ensure calibration 3.3 Undertake site survey with minimum disruption to client and ensure safe working environment for users and survey personnel 3.4 Record physical infrastructure, building use, aesthetics and other issues that will impact on future network performance and acceptance by the client 3.5 Record radio frequency interference issues, sources and possible resolution 3.6 Document results of site survey
4. Develop specifications for upgrade of wireless network	4.1 Document the current network performance equipment and capacity for the expanded network 4.2 Assess interference issues relating to existing radio frequency, topographic barriers, climate, obstacles, transmission distances and construction materials 4.3 Assess optimum location and position of access points, repeaters, routers and other equipment 4.4 Develop cabling plans and repeater links, including power requirements 4.5 Determine frequency to be used based on client and user requirements
5. Model network	5.1 Determine appropriate test and modelling routines 5.2 Determine estimated network traffic and planned growth 5.3 Test planned network using modelling tools and techniques 5.4 Document outcome of tests and revise design where required
6. Determine components for network	6.1 Select and test vendor products and equipment where appropriate 6.2 Consult others, including emerging industry bodies, for sustainable compatibility, economic running costs and user connectivity access 6.3 Finalise components list for suitability and vendor claims

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ELEMENT	PERFORMANCE CRITERIA
	6.4 Prepare implementation plans
7. Present design to client	7.1 Present the design in a clear and logical fashion 7.2 Provide advice to client on reasons for design choice 7.3 Inform the client of design limitations, performance expectations and possible unanticipated outcomes, including security threats 7.4 Obtain feedback from client 7.5 Undertake modifications to design if required 7.6 Complete final design documentation and seek client endorsement

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	2.3, 3.2, 7.4	• Recognises and interprets legislative, organisational and technical material to determine job requirements
Writing	1.3, 2.3, 3.4-3.6, 4.1, 4.4, 5.4, 6.3, 7.5, 7.6	• Develops a broad range of technical material and creates records for a specific audience, using clear and detailed language to convey explicit information, requirements and recommendations
Oral Communication	1.2, 6.2, 7.2-7.4, 7.6	• Uses listening and questioning skills to confirm understanding for requirements and participates in a verbal exchange of ideas/solutions • Uses appropriate, detailed and clear language to address stakeholders, users and industry bodies to disseminate information
Numeracy	3.2, 5.2, 6.2	• Interprets numerical data to estimate and project traffic needs, undertake a cost benefit analysis and accurately calibrate equipment
Navigate the world of work	3.3	• Understands own legal rights and responsibilities and is extending understanding of general legal principles applicable across

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		work contexts
Interact with others	7.1	• Actively identifies the requirements of important communication exchanges, selecting appropriate channels, format, tone and content to suit purpose and audience
Get the work done	1.1, 2.1, 2.2, 3.1-3.3, 3.5, 4.2-4.5, 5.1, 5.3, 6.1, 6.4	• Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world • Uses digital tools to access and organise complex data and analyse multiple sources of information for strategic purposes • May operate from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation, and identifying and addressing issues • Takes responsibility for high-impact decisions in complex situations involving many variables and constraints • Uses nuanced understanding of context to recognise anomalies and subtle deviations to normal expectations, focussing attention on critical issues and variables

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNWK518 Design an enterprise wireless local area network	ICANWK518A Design an enterprise wireless local area network	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK518 Design an enterprise wireless local area network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- assess wireless network performance requirements for the client
- measure and diagnose wireless working environment
- produce wireless models and network specifications appropriate to client requirements
- produce wireless network designs and component lists
- document the design and obtain client approval.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify and describe wireless network survey techniques, including:
  - audit and intrusion detection systems
  - auditing and penetration testing techniques
  - bandwidth and quality of service
  - factors affecting signal quality
- outline the key technical considerations for designing a wireless network, including:
  - features of antenna design
  - layer 2 and layer 3 design issues
  - impact of radio frequency
  - problems associated with topography and obstacles in radio transmission path
  - wireless topologies
  - wireless local area networks (WLAN) and wireless metropolitan access network (WMAN) solutions

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- outline the key client organisation considerations when designing a wireless network, including:
  - small office home office (SOHO) and enterprise local area networks (LANs)
  - transmission control protocols or internet protocols (TCP/IP) and applications
  - wireless security strategies
  - security threats
- outline the software consideration when designing a wireless network, including:
  - network protocols and operating systems
  - security protocols, standards and data encryption.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the network industry, and include access to:

- network infrastructure, including wireless hardware and software
- network technical requirements
- real or simulated wireless networks
- appropriate diagnostic equipment and standards.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK520 Design ICT system security controls

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to design the security controls that ensure an information and communications technology (ICT) system is both physically and legally secure.

It applies to individuals in a range of ICT areas who are required to guarantee the security of ICT systems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Review organisational security policy and procedures	1.1 Review business environment to identify existing requirements 1.2 Determine organisational goals for legal and security requirements 1.3 Verify security needs in a policy document 1.4 Determine legislative impact on business domain 1.5 Gather and document objective evidence on current security

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ELEMENT	PERFORMANCE CRITERIA
	threats 1.6 Identify options for using internal and external expertise 1.7 Establish and document a standard methodology for performing security tests
2. Develop security plan	2.1 Investigate theoretical attacks and threats on the business 2.2 Evaluate risks and threats associated with the investigation 2.3 Prioritise assessment results and write security policy 2.4 Document information related to attacks, threats, risks and controls in a security plan 2.5 Review the security strategy with security approved key stakeholders 2.6 Integrate approved changes into business plan and ensure compliance with statutory requirements
3. Design controls to be incorporated into system	3.1 Implement controls in a procedurally organised manner to ensure minimum risk of security breach in line with organisational guidelines 3.2 Monitor each phase of the implementation to determine the impact on the business 3.3 Take corrective action on system implementation breakdown 3.4 Record implementation process 3.5 Evaluate corrective actions for risk 3.6 Plan risk assessment review process 3.7 Take action to ensure confidentiality throughout all phases of design

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 1.5, 3.1	• Recognises and interprets legislative, organisational and technical material to determine

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		job requirements
Writing	1.3, 1.5, 1.7, 2.3, 2.4, 2.6, 3.4	• Develops a broad range of business reports for a specific audience, using clear and detailed language to convey explicit information, requirements and recommendations
Oral Communication	2.5	• Uses appropriate, detailed and clear language to address personnel and disseminate information in a group environment • Uses listening and questioning skills to confirm understanding for requirements, and participates in a verbal exchange of ideas/solutions
Navigate the world of work	1.2, 1.4, 2.6	• Keeps abreast of legislative or regulatory requirements relevant to own role and considers implications of any changes when planning and undertaking work
Get the work done	1.5, 1.6, 2.1-2.3, 3.1-3.3, 3.5-3.7	• Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world • Is acutely aware of the importance of understanding, monitoring and controlling access to digitally stored and transmitted information • May operate from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation, and identifying and addressing issues • Monitors outcomes of decisions, considering results from a range of perspectives and identifying key concepts and principles that may be adaptable in the future

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNWK520 Design ICT system security controls	ICANWK520A Design IT system security controls	Updated to meet Standards for Training Packages.	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK520 Design ICT system security controls

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- review organisational security policies and procedures
- establish realistic security procedures
- design security plan and controls for a system
- develop a security control strategy
- oversee the implementation and evaluation of the strategy.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe communications security, including human organisational interactions
- describe how to conduct an information security risk assessment
- identify and summarise internet security technologies and processes, including:
  - firewalls
  - physical security
  - security testing methods for performing security tests
  - wireless security
  - security threats
  - the impact of security policies, plans and strategies
  - general features of specific security technology
  - risk assessment
- describe current industry accepted security processes, including general features and capabilities of software and hardware solutions

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- outline the legal and ethical standards expected when considering security controls, including:
  - ethics in information and communications technology (ICT)
  - privacy issues
  - legislation
- summarise the need for developing organisational guidelines, processes, policies and procedures.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the network industry, and include access to:

- ICT security assurance specifications
- probability, frequency and severity of direct and indirect harm, loss or misuse of the ICT system
- risk analysis tools and methodologies
- an ICT environment in which there are security risks
- legislation, regulations and standards relating to security
- existing organisational security policies
- organisational expertise.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK529 Install and manage complex ICT networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to install and manage enterprise-wide information and communications technology (ICT) networks.

It applies to individuals with excellent ICT skills who are working as senior networking staff responsible for the sustainability of an organisation by using virtualisation technologies in complex computing environments of medium- to-large companies to provide network services and resources.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan and design a complex network to meet business requirements	1.1 Review network design, business requirements and latest vendor technical specifications for network components 1.2 Research options available for providing the network functionality required 1.3 Plan network implementation to provide network services and resources to meet business requirements

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ELEMENT	PERFORMANCE CRITERIA
2. Design and implement a security strategy	2.1 Analyse requirements for internal and external security 2.2 Design security strategy to meet requirements 2.3 Implement security strategy 2.4 Undertake ongoing monitoring of the viability and reliability of network security, through testing and use of technical tools 2.5 Continually monitor internal and external network access for security breaches
3. Install and configure a complex network to meet business requirements	3.1 Check and install cabling and associated components according to industry standards 3.2 Install and configure servers, routers, switches or other devices to provide internet protocol (IP) addressing and routing 3.3 Install and configure servers, routers, switches or other devices to provide name resolution 3.4 Install and configure servers, routers, switches or other devices to provide network services 3.5 Install and configure remote access services 3.6 Install and configure devices to provide data management services
4. Provide integrated network services across a complex network	4.1 Integrate multiple network services across network 4.2 Analyse and resolve interoperability issues 4.3 Optimise performance 4.4 Rectify security conflicts arising from integrating services
5. Plan, design and implement voice and video business communications system	5.1 Install software and configure and test voice over internet protocol (VoIP) and videoconferencing services 5.2 Incorporate the use of a communications server to provide real-time multimedia communications 5.3 Select common voice and videoconferencing codecs according to standards and practices
6. Manage and support a complex network	6.1 Identify and evaluate appropriate network management tools to assist in the administration of the complex network 6.2 Select and install network management tools according to industry and organisational standards 6.3 Set and monitor alerts and logs

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ELEMENT	PERFORMANCE CRITERIA
	6.4 Capture and analyse network performance data 6.5 Implement automated server updates 6.6 Implement desktop management policies 6.7 Implement automated virus checking 6.8 Use remote management tools
7. Test network functionality and obtain sign-off	7.1 Test network functionality and record results 7.2 Record results of network functionality test 7.3 Complete network documentation according to organisational standards

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 2.1, 6.6	• Recognises and interprets technical and organisational documentation to determine and confirm job requirements
Writing	2.2, 7.1-7.3	• Develops a broad range of material, including recording test results for a specific audience using clear and detailed language to convey explicit information, requirements and recommendations
Oral Communication	2.1	• Uses listening and questioning skills to confirm understanding for requirements, and participates in a verbal exchange of ideas/solutions
Numeracy	6.4	• Interprets numerical data when taking measurements and evaluating the performance and interoperability of network services
Navigate the world of work	3.1, 5.3, 6.2, 7.3	• Recognises and responds to both explicit and implicit protocols within familiar work contexts and appreciates the importance of identifying and responding to protocols in new situations
Get the work done	1.1, 1.3, 2.3-2.5, 3.1-3.6, 4.1-4.4,	• Considers the strategic and operational potential of digital trends to achieve work goals, enhance work processes, create opportunities and

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	5.1-5.3, 6.1-6.8, 7.1	enhance or reduce risks • Actively identifies, creates and utilises linkages to enhance knowledge sharing, idea creation, individual and collective engagement, and work outcomes • Uses a broad range of strategies to store, access and organise virtual information, recognising that design choices will influence what information is retrieved and how it may be interpreted and used • Is acutely aware of the importance of understanding, monitoring and controlling access to digitally stored and transmitted information • May operate from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation, and identifying and addressing issues • Uses nuanced understanding of context to recognise anomalies in a network environment and subtle deviations to normal expectations, focussing attention and remedying problems as they arise

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNWK529 Install and manage complex ICT networks	ICANWK529A Install and manage complex ICT networks	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK529 Install and manage complex ICT networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- design and implement a complex network that involves integrating multiple network services to meet business requirements
- design and implement an appropriate security strategy for a complex network
- monitor and test the performance of aspects of the solution
- provide ongoing management and support of the network.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe firewall configurations and their application
- summarise internet protocol (IP) addressing and network configuration
- summarise and apply the following aspects of a network:
  - infrastructure
  - load balancing for applications
  - security
  - server operating systems
  - service configuration, including:
    - domain name system (DNS)
    - dynamic host configuration protocol (DHCP)
    - file transfer protocol (FTP)
    - network time protocol (NTP)
    - server messages block (SMB)

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  - mail
  - proxy
  - web
  - service management
- identify and describe troubleshooting tools and techniques, including network diagnostic utilities
- outline the purpose of user authentication and directory services
- describe voice over internet protocol (VoIP)
- describe virtual private network (VPN).

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the network industry, and include access to:

- network design and business requirements documents
- a complex network or hardware and software required to build a network involving multiple servers, multiple physical locations (or simulation of) and a combination of network services.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK531 Configure an internet gateway

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to connect network hardware devices, mainly personal computers (PCs), to an internet gateway.

It applies to individuals who are middle managers, network engineers, technical specialists or security analysts with excellent information communications and technology (ICT) skills who plan and implement networks, determine security threats and are involved in business budgeting.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Confirm client requirements and network equipment	1.1 Confirm and validate client requirements 1.2 Determine scope of internet services with reference to client requirements 1.3 Identify and install both hardware and software components 1.4 Verify equipment specifications and availability of components

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ELEMENT	PERFORMANCE CRITERIA
2. Review security issues	2.1 Assess security features of internet gateways with reference to architecture and security plan 2.2 Review security measures with the internet service provider (ISP) with reference to firewalls and other measures as required 2.3 Brief users on the security plan with reference to internet use and hazard possibilities
3. Install and configure gateway products and equipment	3.1 Identify and select installation and configuration options 3.2 Install and configure gateway products and equipment as required by technical guidelines 3.3 Plan and execute tests with reference to client requirements and network impact 3.4 Analyse error reports and make changes as required
4. Configure and test node	4.1 Assign node to specific gateway as required by network architecture and client requirements 4.2 Determine connection type and configure with reference to network architecture and client requirements 4.3 Ensure node software and hardware are configured as required according to vendor specifications and client requirements

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.2, 1.4, 2.1, 3.2-3.4, 4.1-4.3	• Recognises and interprets technical documentation, equipment manuals and specifications to determine and confirm job requirements
Oral Communication	1.1, 1.2, 2.2, 2.3, 3.3, 4.1-4.3	• Uses highly developed listening, observational and questioning skills to understand others' perspectives and clarify, explore and extend meaning • Establishes and maintains complex and effective spoken communication to convey and clarify a range of complex information to relevant personnel

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Navigate the world of work	2.3, 3.2	• Monitors adherence to legal and regulatory rights and responsibilities for self and possibly others
Get the work done	1.2-1.4, 2.1, 2.2, 3.1-3.3, 4.1-4.3	• Considers the strategic and operational potential of digital trends to achieve work goals, enhance work processes, create opportunities and enhance or reduce risks • Uses a broad range of strategies to store, access and organise virtual information, recognising that design choices will influence what information is retrieved and how it may be interpreted and used • Is acutely aware of the importance of understanding, monitoring and controlling access to digitally stored and transmitted information • May operate from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation, and identifying and addressing issues • Uses nuanced understanding of context to recognise anomalies in a network environment and subtle deviations to normal expectations, focussing attention and solving problems as they arise

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNWK531 Configure an internet gateway	ICANWK531A Configure an internet gateway	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK531 Configure an internet gateway

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- determine client requirements and network specifications
- determine security measures and brief users
- connect network hardware devices to an internet gateway
- configure and test gateway products
- configure and test node according to vendor specifications and client requirements.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify and describe current browser software
- explain domain name server (DNS) resolution
- outline the features and functions of:
  - network architecture
  - bridges as required
  - desktop operating systems
  - hubs
  - network gateways
  - network operating systems:
  - routers
  - switches
- describe the security issues that may impact on an internet gateway
- describe common security solutions and strategies

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- identify and describe the principle function of current gateway software.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the network industry, and include access to:

- a network and internet where gateway products may be installed and configured
- use of hardware and software currently used in industry
- client requirements documentation
- vendor specifications.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK536 Plan, implement and test enterprise communication solutions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Application

This unit describes the skills and knowledge required to manage the deployment and administration of enterprise communication solutions. It includes email and remote access email, web portal or content management solution, and enterprise collaboration tools.

It applies to individuals working as information and communications technology (ICT) professionals who configure and deploy software to supply email, collaboration and messaging services to meet the needs of enterprise users.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan for enterprise communication solutions	1.1 Research and identify enterprise communication solutions to meet organisational requirements 1.2 Evaluate and compare enterprise communication solutions against organisational requirements 1.3 Select enterprise communication solutions to address

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	organisational requirements 1.4 Acquire enterprise communication solutions in accordance with organisational requirements 1.5 Consult with stakeholders to develop implementation plan addressing the organisational requirements
2. Implement enterprise communication solutions	2.1 Implement and configure enterprise communication solutions in accordance with implementation plan 2.2 Determine if implementation of enterprise communication solutions meets implementation plan and organisational requirements and modify implementation to address variance
3. Test and monitor implementation of enterprise communication solutions	3.1 Test enterprise communication solutions to determine if enterprise communication solutions are operating correctly according to system specifications 3.2 Monitor and analyse performance and logs of enterprise communication solutions to determine if organisational requirements are met 3.3 Modify enterprise communication solutions to address instances where organisational requirements are not met

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	**Description**
Reading	• Gathers, interprets and analyses technical documentation to test and implement enterprise tools successfully
Numeracy	• Selects and interprets mathematical information that may be partly embedded in a range of familiar and less familiar tasks to evaluate performance and interoperability of communication services
Get the work done	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context to plan, design and implement a communications solution • Reflects on the ways in which digital systems and tools are used, or could be used, to achieve work goals and begins to recognise strategic and operational applications • Uses specialised software to ensure an enterprise can engage with geographically distributed team members • Initiates standard procedures when responding to a predictable range

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	of network and software compatibility problems

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNWK536 Plan, implement and test enterprise communication solutions	ICTNWK501 Plan, implement and test enterprise communication solutions	Edits to application to clarify intent and scope. Edits to elements 1–3 and assessment requirements to clarify intent. Edits to foundation skills to align with unit elements.	Equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK536 Plan, implement and test enterprise communication solutions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements and performance criteria of this unit; including evidence of the ability to:

- Plan, implement and test enterprise communication solutions including:
  - one email system including:
    - preparing existing networks
    - configuring users, mailboxes, address lists, distribution lists, user constraints, remote email access, message integrity and antispam controls, antivirus controls and anti-phishing controls
  - one content management system including:
    - planning namespace and server roles
    - configuring access, security, network infrastructure and customisations
    - providing high availability and disaster recovery
  - one collaboration tool including:
    - planning namespace and server roles
    - configuring access, security, network infrastructure and customisations
    - providing high availability and disaster recovery
    -

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

- Key requirements of an ICT implementation plan
- Features and purpose of an email server application
- Features and purpose of organisational collaboration tools
- Features and purpose of web portal or content management software
- Testing processes
- Key principles of data protection, including:

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  - backup and restoration
  - firewall configuration
  - security and authentication practices
- Important features of network administration, including:
  - load balancing for applications
  - server and directory administration
  - infrastructure
  - web server administration
  -

Assessment Conditions

Skills must be demonstrated in a workplace or simulated environment where conditions are typical of those in an ICT working environment or ICT workplace. This includes:

- Site where server applications can be installed
- Networked servers
- Organisational requirements for email solution, remote access to email, content management system, and collaboration tools.
- Details relating to enterprise email requirements including users, mailboxes, address lists, distribution lists, and user constraints
- Antivirus, antispam, and anti-phishing controls
- Enterprise collaboration software
- Workstations
- Switch
- Wide area network (WAN) service point of presence
- Individual stakeholders to consult

Assessors of this unit must satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK603 Plan, configure and test advanced internetwork routing solutions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge necessary to plan, configure and support advanced internet protocol (IP) addressing and routing when implementing scalable and secure routers connected to local area networks (LANs) and wide area networks (WANs). The unit also covers configuration of secure routing solutions to support branch offices and mobile workers.

It applies to individuals with advanced information and communications technology (ICT) skills who are working in a variety of roles, including network specialists, network engineers, network infrastructure engineers, senior network administrators, network and systems managers, ICT security specialists, security engineers, communications engineers and communications managers.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan, configure and test a complex network-routing protocol	1.1 Determine network resources required for implementing a complex distance-vector routing protocol solution, a multi-area link-state routing protocol solution and an exterior routing

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ELEMENT	PERFORMANCE CRITERIA
solution	protocol solution on a network 1.2 Produce separate protocol implementation plans and verification plans for each routing solution 1.3 Configure and test the routing protocol solution 1.4 Document results of the routing protocol solution implementation and verification plans for each solution
2. Plan, configure and test an internet protocol version 6- (IPv6) based network solution	2.1 Determine network resources needed for implementing IPv6 on a network 2.2 Produce an implementation plan and a verification plan for an IPv6-based network solution 2.3 Configure IPv6 routing and IPv6 interoperation with IPv4 2.4 Verify and test the IPv6 solution and make amendments if necessary 2.5 Document results of IPv6 implementation and verification plans
3. Plan, configure and test an IPv4 or IPv6-based network redistribution solution	3.1 Produce an IPv4 or IPv6 redistribution implementation plan and verification plan, based on the outcomes of a network redistribution analysis 3.2 Configure and verify the redistribution solution for the network 3.3 Document results of redistribution, implementation and verification plans 3.4 Analyse the differences between implementing an IPv4 and an IPv6 redistribution solution
4. Plan, configure and test a layer 3 path control solution	4.1 Produce a layer 3 path control implementation plan and a verification plan based on the outcomes of a network redistribution analysis 4.2 Configure and verify layer 3 path control for the network 4.3 Implement basic teleworker and branch services 4.4 Evaluate and compare broadband technologies and VPN technologies in terms of access and data transfer rate as solutions for secure broadband network

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1	• Recognises and interprets complex technical information to determine and confirm job requirements
Writing	1.2, 1.4, 2.2, 2.5, 3.1, 3.3, 4.1	• Develops a broad range of material including operational, technical and project management documentation for a specific audience, using clear and detailed language to convey explicit information, requirements and recommendations
Get the work done	1.1, 1.3, 2.1, 2.3, 2.4, 3.1, 3.2, 3.4, 4.1-4.4	• Considers the strategic and operational potential of digital trends to achieve work goals, enhance work processes, create opportunities and enhance or reduce risks • Uses a broad range of strategies to store, access and organise virtual information, recognising that design choices will influence what information is retrieved and how it may be interpreted and used • Is acutely aware of the importance of understanding, monitoring and controlling access to digitally stored and transmitted information • May operate from a broad conceptual plan to identify functional, performance and management features associated with the operation of complex networks • Uses nuanced understanding of context to solve problems in complex and dynamic environments with demanding service levels

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTNWK603 Plan, configure and test advanced internetwork routing solutions	ICANWK603A Plan, configure and test advanced internetwork routing solutions	Updated to meet Standards for Training Packages.	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK603 Plan, configure and test advanced internetwork routing solutions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- plan, configure and support advanced routed network infrastructure
- use network tools
- plan and analyse redistribution solutions
- produce and configure layer 3 path control implementation plan
- provide solutions to static and dynamic routing issues together with optimisation strategies.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain broadband technologies relevant to advanced internetworking routing solutions
- summarise business justifications for having integrated and unified enterprise networks
- outline emerging viable business and social technologies
- clarify external developments or factors that affect network design
- summarise IPv4 and IPv6 technologies and solutions
- outline maintenance and management tools and practices suitable for complex networks to achieve availability and resilience
- summarise network topologies
- explain regulations, standards and certifications relevant to advanced internetworking routing solutions
- explain risk management strategies and practices suitable for a complex network environment
- outline routing tables, protocols and operational processes

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- summarise routing technologies for an enterprise environment
- summarise security for enterprise networks
- explain security standards and technologies for network environments
- outline the benefits of formal or structured approaches to network management
- summarise virtual private network (VPN) technologies.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the networking industry, and include access to:

- a site where network installation may be conducted
- router hardware and software
- organisational guidelines
- computers
- local area network (LAN) and wide area network (WAN) systems.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK604 Plan and configure advanced internetwork switching solutions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to plan, configure and support advanced enterprise switching. The unit also covers secure integration of virtual local area networks (VLANs), wireless local area networks (WLANs), voice and video into campus networks.

It applies to individuals with advanced information and communications technology (ICT) skills who are working in a variety of roles, including network specialists, network engineers, network infrastructure engineers, senior network administrators, network and systems managers, ICT security specialists, security engineers, communications engineers and communications managers.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan, configure and test a VLAN-based solution	1.1 Determine network resources required for implementing a VLAN-based solution for a given network design and requirements 1.2 Produce an implementation plan and a verification plan for

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ELEMENT	PERFORMANCE CRITERIA
	the VLAN-based network solution 1.3 Configure and verify switch-to-switch connectivity, loop prevention and access ports for the VLAN-based solution using network tools 1.4 Document results of the VLAN implementation and verification plans
2. Plan, configure and test a secure layer 2 network solution and a switch-based layer 3 services solution	2.1 Determine network resources required for implementing a secure layer 2 network solution and a switch-based layer 3 solution against vulnerabilities with organisational security policies 2.2 Produce an implementation plan and a verification plan for each of the layer 2 and layer 3 network solution 2.3 Configure and verify a private VLAN and features for port security and general switch security for the layer 2 network solution, using network tools 2.4 Configure and verify routing interfaces and layer 3 security for the switch-based layer 3 network solution, using network tools 2.5 Document results of security implementation and verification plans for each of the layer 2 and the layer 3 network solution
3. Prepare infrastructure to support advanced services	3.1 Implement a wireless extension of a layer 2 solution 3.2 Implement a support solution for a voice over internet protocol (VoIP) and a video application
4. Plan, configure and test high-availability networks using multilayer switches solution	4.1 Determine network resources needed for implementing high-availability solution for a given network design and requirements 4.2 Produce an implementation plan and a verification plan for the high-availability network, using multilayer switches 4.3 Configure, verify and manage first hop redundancy protocols (FHRP) 4.4 Implement switch supervisor redundancy and use network tools to verify the high-availability solution 4.5 Document results of high-availability implementation and verification plans

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	2.1, 4.1	• Recognises and interprets complex technical design information to determine and confirm job requirements
Writing	1.2, 1.4, 2.2, 2.5, 4.1, 4.2, 4.5	• Develops a broad range of material, including operational, technical, procedural and project management documentation for a specific audience, using clear and detailed language to convey explicit information, requirements and recommendations
Navigate the world of work	2.1	• Recognises and responds to both explicit and implicit protocols within familiar work contexts and appreciates the importance of identifying and responding to protocols in new situations
Interact with others	1.1, 2.1, 4.1	• Collaborates with others, sharing information • Elicits feedback and provides feedback to others in order to improve
Get the work done	1.1, 1.3, 2.1, 2.3, 2.4, 3.1, 3.2, 4.1, 4.3, 4.4	• Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world and uses these to troubleshoot and understand the uses and potential of new technology • Uses a broad range of strategies to store, access and organise virtual information, recognising that design choices will influence what information is retrieved and how it may be interpreted and used • Is acutely aware of the importance of understanding, monitoring and controlling access to digitally stored and transmitted information • May operate from a broad conceptual plan to identify functional, performance and management features associated with the operation of complex switched networks • Uses nuanced understanding of context to solve problems in complex and dynamic environments with demanding service levels

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Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNWK604 Plan and configure advanced internetwork switching solutions	ICANWK604A Plan and configure advanced internetwork switching solutions	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK604 Plan and configure advanced internetwork switching solutions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- design, configure and support advanced switched network infrastructure
- implement wireless extension solution with multi-layered (layer 3) switches
- prepare infrastructure to support advanced services
- use network tools.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain the benefits of formal or structured approach to network management
- summarise business justifications for having integrated and unified enterprise networks
- outline current wireless regulations, standards and certifications
- clarify emerging viable business and social technologies
- explain external developments or factors that affect switched network design
- summarise maintenance and management tools and practices suitable for complex networks to achieve availability and resilience
- outline network topologies
- explain organisational policies for internetworking
- summarise risk management strategies and practices suitable for a complex switched network environment
- outline security for an enterprise-switched environment
- explain security standards and technologies for switched network environments
- summarise switching and routing technologies for an enterprise-switched environment.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the networking industry, and include access to:

- a site where network installation may be conducted
- hardware and software
- organisational guidelines
- computers
- local area network (LAN) and wide area network (WAN) systems, including voice and video (hardware or software).

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK605 Design and configure secure integrated wireless systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to use appropriate tools, equipment, software and protocols to produce a verified radio frequency (RF) design plan for a wireless local area network (WLAN) and to design, configure and troubleshoot secure integrated wireless systems.

It applies to individuals with advanced information and communications technology (ICT) skills who are working as wireless network installers, wireless network support specialists and wireless network engineers.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan and conduct a site survey for setting up a wireless network	1.1 Assess client requirements to plan for selecting appropriate WLAN technology and network elements 1.2 Evaluate existing network infrastructure and produce a wireless network topology to determine upgrade or new installation requirements

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ELEMENT	PERFORMANCE CRITERIA
	1.3 Prepare basic RF deployment considerations related to site survey design of data or voice over WLAN applications 1.4 Produce a survey model, including deployment characteristics to meet client requirements 1.5 Produce a spectral analysis predictive layer 1 site survey verified by a physical site survey 1.6 Analyse the survey results produced with an RF network design for a secure wireless network 1.7 Conduct an RF field trial for final evaluation of network topology and network element placements
2. Prepare design specifications and plan for secure enterprise WLANs	2.1 Prepare for work according to relevant legislation, workplace health and safety (WHS), codes, regulations and standards 2.2 Produce design specifications and layout for wireless network, using spread spectrum technology for enhanced network security 2.3 Review design plans to ensure sound WLAN RF principles and compliance with wireless regulatory bodies, standards and certifications
3. Configure and test a controller-based WLAN	3.1 Produce a controller-based wireless architecture from a possible range of industry-based wireless network architectures 3.2 Configure and test a WLAN controller and access points, using controller-based AP discovery and association to enable roaming facilities 3.3 Configure the basics of a stand-alone access point 3.4 Configure and test client operating system WLAN configuration and install vendor specific software and utilities where applicable
4. Configure and test WLAN security	4.1 Review the general framework of wireless security and security components for securing the WLAN 4.2 Configure and test identification assignments to network elements 4.3 Configure and test authentication methods, using different sources of authentication 4.4 Configure and test encryption methods to comply with network security policies

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ELEMENT	PERFORMANCE CRITERIA
5. Conduct WLAN maintenance and troubleshooting	5.1 Evaluate WLAN troubleshooting methods for controllers, access points and client methodologies 5.2 Use networking tools to maintain and troubleshoot network 5.3 Transfer device configurations and operating system (OS), using maintenance tools and commands

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.6, 2.3, 4.4	• Recognises and interprets complex technical documentation to determine and confirm job requirements
Writing	1.1, 1.4, 1.5, 2.2	• Develops a broad range of materials, including design and technical specifications, for a specific audience, using clear and detailed language to convey explicit information, requirements and recommendations
Numeracy	3.2, 3.4, 4.2-4.4	• Interprets numerical data and undertakes measurements to evaluate performance and interoperability of network
Navigate the world of work	2.1, 2.3, 4.4	• Monitors adherence to legal and regulatory rights and responsibilities for self and possibly others
Interact with others	1.1, 1.4	• Identifies and uses appropriate communication conventions and protocols when liaising with internal and external stakeholders on technical, operational and business-related matters
Get the work done	1.1-1.3, 1.5-1.7, 2.2, 3.1-3.4, 4.1-4.4, 5.1- 5.3	• Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world and uses these to troubleshoot and understand the uses and potential of new technology • Uses a broad range of strategies to store, access and organise virtual information, recognising that design choices will influence what information is retrieved and how it may be interpreted and used

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		• Is acutely aware of the importance of understanding, monitoring and controlling access to digitally stored and transmitted information • May operate from a broad conceptual plan, coordinating the process with others to identify functional, performance and management features associated with the operation of complex switched networks • Uses understanding of context to troubleshoot and debug WAN issues, adapt configuration procedures to network requirements and reconfigure, depending on differing operational contingencies, risk situations and environments

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNWK605 Design and configure secure integrated wireless systems	ICANWK605A Design and configure secure integrated wireless systems	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK605 Design and configure secure integrated wireless systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- plan and conduct a wireless local area network (WLAN) site survey
- produce design specifications and layout of wireless network
- configure and test a controller-based WLAN
- test wireless security configurations
- maintain a WLAN.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain authentication and encryption methods
- summarise configuration, verification and troubleshooting procedures regarding:
  - router-operation
  - routing virtual local area network (VLAN) switching
  - inter-switching communications
- outline configuration of WLAN securities
- clarify current wireless regulations, standards and certifications
- summarise internetwork operating system (IOS) and internet protocol (IP) networking models
- explain radio frequency (RF) and WLAN technology and network design
- outline RF propagation and implementation issues
- explain spread spectrum technologies
- summarise wireless network topologies and elements
- outline wireless networking protocols

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- describe WLAN devices, their specification and use
- summarise WLAN radio frequencies characteristics and their measuring techniques.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the networking industry, and include access to:

- a site where network installation may be conducted
- hardware and software
- organisational guidelines
- computers
- stand-alone and lightweight WLAN controllers and access point (AP)
- hardware and software WLAN site survey tools.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK606 Implement voice applications over secure wireless networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to use network tools, equipment, software and protocols to design and integrate voice over wireless local area network (VoWLAN) services into the wireless local area network (WLAN), and to implement into the wireless network quality of service (QoS), multi-protocol label switching (MPLS), and high bandwidth applications.

It applies to individuals with excellent information communications and technology (ICT) skills who are working as wireless help desk technicians, wireless network support specialists and wireless network engineers.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Specify requirements for voice over wireless architecture	1.1 Analyse voice requirements for use over a wireless network 1.2 Specify wireless requirements for voice applications for design considerations

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ELEMENT	PERFORMANCE CRITERIA
	1.3 Verify network for voice readiness and suitability
2. Design the implementation of secure VoWLAN	2.1 Configure wireless client devices 2.2 Design and configure the WLAN for VoWLAN with security configurations 2.3 Design and configure infrastructure devices 2.4 Devise structured troubleshooting methodology for VoWLAN implementation
3. Design and implement QoS for wireless applications	3.1 Plan general design considerations for wired QoS 3.2 Design wireless QoS deployment schemes 3.3 Configure WLAN equipment for QoS
4. Design, implement and test multicast over wireless environment	4.1 Evaluate general multicast concepts 4.2 Analyse the implications for multicast in 802.11 4.3 Configure multicast requirements for a wireless network 4.4 Devise structured troubleshooting methodology for multicast in a WLAN environment
5. Plan and scope the wireless network for video and high-bandwidth applications	5.1 Design and implement QoS for latency-sensitive applications 5.2 Analyse the requirement for video applications over 802.11n WLAN 5.3 Calculate and predict bandwidth requirements for video applications over the wireless network 5.4 Analyse the impact of the WLAN interconnectivity for devices on QoS for devices or the wired side

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1	• Recognises and interprets complex technical documentation to determine and confirm job requirements

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Writing	1.2, 2.2-2.4, 3.2, 4.4, 5.1	• Develops a range of material, including design and technical specifications, for a specific audience, using clear and detailed language to convey explicit information, requirements and recommendations
Numeracy	5.3	• Interprets numerical data and undertakes measurements to evaluate performance and interoperability of the network
Get the work done	1.1-1.3, 2.1- 2.4, 3.1-3.3, 4.1-4.4, 5.1, 5.2, 5.4	• Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world and uses these to troubleshoot and understand the uses and potential of new technology • Uses a broad range of strategies to store, access and organise virtual information, recognising that design choices will influence what information is retrieved and how it may be interpreted and used • Is acutely aware of the importance of understanding, monitoring and controlling access to digitally stored and transmitted information • May operate from a broad conceptual plan, coordinating the process with others to identify functional, performance and management features associated with the operation of complex VoWLAN services • Uses nuanced understanding of context to troubleshoot and debug WLAN issues, adapt configuration procedures to network requirements and reconfigure depending on differing operational contingencies, risk situations and environments

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNWK606 Implement voice applications over secure wireless networks	ICANWK606A Implement voice applications over secure wireless networks	Updated to meet Standards for Training Packages.	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK606 Implement voice applications over secure wireless networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- analyse and specify voice over wireless architecture requirements
- design and implement voice applications over wireless local area network (WLAN)
- implement a quality of service (QoS) for wireless applications
- use network tools to configure and test wireless infrastructure and applications
- plan and scope the wireless network bandwidth.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain the configuration, verification and troubleshoot procedures required to undertake:
  - router operation and routing
  - virtual local area network (VLAN) switching and inter-switching communications
- summarise iDevice operating system (iOS) and internet protocol (IP) networking models
- outline video and high-bandwidth applications and requirements
- explain voice applications and protocols
- clarify voice over wireless local area network (VoWLAN) technologies
- describe the following aspects of wireless networks:
  - current regulations, standards and certifications
  - deployment schemes
  - network security technology
  - network topologies and elements
  - networking protocols

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- summarise WLAN devices and their specification and use.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the networking industry, and include access to:

- a site where network installation may be conducted
- hardware and software
- organisational guidelines
- computers
- stand-alone and lightweight WLAN controllers and AP
- hardware and software LAN/WLAN voice technologies.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK610 Design and build integrated VoIP networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to use appropriate tools, equipment, software and protocols to design and build an internet protocol (IP) based integrated voice network for small-to-medium enterprises.

It applies to individuals with advanced information and communications technology (ICT) skills who are working as voice over internet protocol (VoIP) network support specialists, VoIP network engineers and VoIP systems installers.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan design concepts of a voice network for specified voice quality	1.1 Determine the design requirements of an IP-based voice network, including the choice of network elements 1.2 Evaluate the various applications of real-time protocols and of signalling protocols for an appropriate gateway 1.3 Design a site numbering plan, including digit manipulation and path selection process

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Plan and assign calling privileges as required 1.5 Predict VoIP call flow and potential impact on voice quality considerations and network performance
2. Design, configure implement and test voice protocols and interoperation of VoIP communications network	2.1 Produce the design layout of the voice network according to the design requirements 2.2 Design and configure a gateway and a gatekeeper to using H.323 protocol suite for dial plan resolution and call admission control for the network 2.3 Configure and test the use of real-time protocols, call management protocols and gateway signalling protocol in the network design 2.4 Analyse the function and interoperation of gatekeepers within an IP communications network
3. Design, configure and test a VoIP IP-to-IP call system	3.1 Analyse the IP-to-IP gateway features and functionality requirements for a given network design requirement 3.2 Configure the gatekeeper to support an IP-to-IP gateway 3.3 Configure and test the IP-to-IP gateway to provide address hiding, protocol and media interworking, and call admission control implementations 3.4 Produce test results and evaluate against design requirements

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 2.1, 3.1, 3.4	• Recognises and interprets complex technical information to determine and adhere to design requirements
Writing	1.3, 2.1, 3.4	• Develops a broad range of material including test results, planning and design documentation for a specific audience using clear and detailed language in order to convey explicit information, requirements and recommendations
Numeracy	1.3, 1.5, 2.3, 3.3, 3.4	• Interprets numerical data in the planning phase and undertakes measurements to evaluate performance and

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		interoperability of network
Get the work done	1.1, 1.2, 1.4, 1.5, 2.2-2.4, 3.1-3.3	• Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world and uses these to troubleshoot and understand the uses and potential of new technology • Uses a broad range of strategies to store, access and organise virtual information, recognising that design choices will influence what information is retrieved and how it may be interpreted and used • Is acutely aware of the importance of understanding, monitoring and controlling access to digitally stored and transmitted information • Uses a mix of intuitive and formal processes to identify key information and issues, evaluate alternative strategies, anticipate consequences and consider implementation issues and contingencies • May use formal analytical and lateral thinking techniques for identifying issues and generating and evaluating possible solutions

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNWK610 Design and build integrated VoIP networks	ICANWK610A Design and build integrated VoIP networks	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK610 Design and build integrated VoIP networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- determine requirements and produce a concepts design of a voice over internet protocol (VoIP) network
- produce a design layout
- configure and test voice gateways
- design site numbering plan, dial plans and priorities
- use networking and network management tools
- configure and test real-time protocols, call management protocols and gateway signalling protocol in the network elements
- implement voice systems and applications.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain codecs and their protocols for use
- summarise configuration, verification and troubleshooting procedures to undertake basic router operation and routing switch with VLANs and inter-switching communications
- outline design considerations and deployment schemes
- explain gateway technologies
- summarise internetwork operating system (IOS) and internet protocol (IP) networking models
- outline procedures and techniques for implementing local area network/wide area network (LAN/WAN) topologies
- explain network topologies, architectures and elements
- identify and describe networking standards and protocols

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- outline voice applications and protocols
- explain VoIP technologies.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the networking industry, and include access to:

- a site where network installation may be conducted
- hardware and software
- organisational guidelines
- computers
- stand-alone and lightweight wireless local area network (WLAN) controllers and access point (AP)
- hardware and software local area network LAN/WLAN voice technologies.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK611 Configure call processing network elements for secure VoIP networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to use tools, equipment, software and protocols to install or upgrade call processing network elements for secure and reliable internet protocol (IP)-based communications networks.

It applies to individuals with advanced information communications technology (ICT) skills who are working as advanced voice over internet protocol (VoIP) network support specialists, VoIP network engineers and VoIP systems installers.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan to implement enterprise IP communications	1.1 Produce design considerations for planning and implementing IP-based voice communications networks 1.2 Produce a solutions plan to meet business expectations 1.3 Select the required resources to effectively install or upgrade voice management servers

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Perform, test and evaluate the installation or upgrade of voice call management software against the solutions plan
2. Plan, configure and test call processing network elements for a single-site deployment	2.1 Produce a topology of the voice network and plan the location of the call processing network elements to best support the business requirements 2.2 Install and test voice servers to support user requirements, third-party session initiation protocol (SIP) phones and lightweight directory access protocol (LDAP) integration 2.3 Install and configure local area network (LAN) switches to support IP phones 2.4 Configure and test voice gateways according to gateway requirements to allow for internal calls and external calls and provide voice features 2.5 Configure and test the integration of voice servers with other media systems 2.6 Test and evaluate final configuration against the design requirements
3. Manage security and privacy of IP voice network	3.1 Produce design and installation templates for bulk deployment across the enterprise 3.2 Research and implement the use of a network support model to manage the performance and security of the IP voice network 3.3 Design and conduct simple security deployment scenarios to test the integrity and security of the voice network

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.4, 2.4, 2.6, 3.2	• Recognises and interprets complex technical information to determine and adhere to design requirements
Writing	1.1, 1.2, 2.1, 3.1	• Develops a broad range of material, including planning documentation, design and installation templates for a specific audience using clear and detailed language to

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		convey explicit information, requirements and recommendations
Numeracy	1.3, 1.4, 2.2, 2.4-2.6	• Interprets numerical data in planning phase and undertakes measurements to evaluate performance and interoperability of network • Uses mathematical formulas and calculations to estimate and plan resource requirements
Get the work done	1.1, 1.3, 1.4, 2.1-2.6, 3.2	• Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world, and uses these to troubleshoot and understand the uses and potential of new technology • Uses a broad range of strategies to store, access and organise virtual information, recognising that design choices will influence what information is retrieved and how it may be interpreted and used • Is acutely aware of the importance of understanding, monitoring and controlling access to digitally stored and transmitted information • Uses a mix of intuitive and formal processes to identify key information and issues, evaluate alternative strategies, anticipate consequences and consider implementation issues and contingencies • May use formal analytical and lateral thinking techniques for identifying issues and generating and evaluating possible solutions

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNWK611 Configure call processing network elements for secure VoIP networks	ICANWK611A Configure call processing network elements for secure VoIP networks	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK611 Configure call processing network elements for secure VoIP networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- produce design plan and requirements of call processing network elements
- configure and test voice gateways and local area network (LAN) switches
- evaluate voice call manager server requirements and design voice call systems and applications
- implement voice systems and applications on voice call manager
- manage security of voice network.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- summarise call processing network element technology
- outline codecs and their protocols for use
- explain configuration, verification and troubleshoot procedures to undertake:
  - basic router operation and routing
  - switch with virtual local area network (VLANs) and inter-switching communications
- summarise design considerations and deployment schemes
- explain interoperability of legacy private branch exchange (PBX) to internet protocol (IP) voice communications
- outline internetwork operating system (IOS) and IP networking and network support models
- summarise LAN and wide area network (WAN) implementations
- outline network topologies, architectures and elements
- summarise network, signalling and call management protocols

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- outline networking standards and protocols
- summarise security deployment scenarios
- explain voice applications and protocols
- outline voice over internet protocol (VoIP) technologies.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the networking industry, and include access to:

- site where network installation may be conducted
- hardware and software
- organisational guidelines
- computers
- stand-alone and lightweight WLAN controllers and access points (AP)
- hardware and software LAN/WLAN voice technologies.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK612 Plan and manage troubleshooting advanced integrated IP networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to plan, manage and implement troubleshooting and monitoring strategies to ensure reliability and performance on advanced integrated internet protocol (IP) networks.

It applies to individuals with advanced information and communications technology (ICT) skills who are working as advanced support engineers, network support specialists and ICT network engineers.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan the strategies for troubleshooting and monitoring the performance of advanced integrated IP networks	1.1 Develop a plan to monitor and manage the IP network to optimise its performance and reliability 1.2 Plan the isolation of network segments for troubleshooting procedures 1.3 Plan the testing sequences and scenarios of network

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ELEMENT	PERFORMANCE CRITERIA
	infrastructure 1.4 Select appropriate network testing and monitoring tools, and software application to suit the specific network troubleshooting and monitoring sequence
2. Manage and monitor troubleshooting strategies for complex enterprise networks	2.1 Manage and monitor strategies for network monitoring structure 2.2 Produce a routine internetwork operating system (IOS) device maintenance plan to include monitoring of routing protocols and router configurations 2.3 Isolate sub-optimal internetwork operations at the appropriate open systems interconnection (OSI) model layer 2.4 Produce a plan for troubleshooting and monitoring security issues related to IOS services for mission critical applications 2.5 Produce a plan for troubleshooting and monitoring internet protocol version 6 (IPv6) and version 4 (IPv4) interoperability
3. Implement test plans for advanced network solutions	3.1 Test switch-to-switch connectivity, access ports and loop prevention for the virtual local area network (VLAN) based solution 3.2 Test private VLANs 3.3 Test switch virtual interfaces (SVI) 3.4 Test switch support of advanced services 3.5 Troubleshoot switch configuration

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.2-1.4, 2.2, 2.4, 2.5	• Organises, evaluates and critiques ideas and information from a range of complex texts
Writing	1.1, 2.2, 2.4, 2.5	• Develops a broad range of material, including troubleshooting plans for a specific audience, using clear and detailed language to convey explicit information, requirements and recommendations

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Numeracy	3.1-3.4	• Interprets numerical data when testing plans for advanced network solutions, including taking measurements to evaluate performance and interoperability of network
Get the work done	1.2-1.4, 2.1-2.5, 3.1-3.4	• Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world and uses these to troubleshoot and understand the uses and potential of new technology • Is acutely aware of the importance of understanding, monitoring and controlling access to digitally stored and transmitted information • Uses a mix of intuitive and formal processes to identify key information and issues, evaluate alternative strategies, anticipate consequences and consider implementation issues and contingencies • When dealing with complex issues, may use intuition to identify the general problem area, switching to analytical processes to generate possible solutions depending on differing operational contingencies, risk situations and environments

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNWK612 Plan and manage troubleshooting advanced integrated IP networks	ICANWK612A Plan and manage troubleshooting advanced integrated IP networks	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK612 Plan and manage troubleshooting advanced integrated IP networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- plan and monitor internet protocol (IP) networks for performance and reliability
- evaluate, design and implement a troubleshooting structured plan
- use network testing and monitoring tools
- produce a maintenance plan for monitoring routing protocols and configurations
- implement tests of advanced network solutions.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- summarise advanced network solutions
- explain configuration, verification and troubleshoot procedures to undertake:
  - router operation and routing
  - virtual local area networks (VLANs) switching and inter-switching communications
- outline deployment schemes
- explain iDevice operating system (iOS) and IP networking models
- explain IOS services
- explain IP network topologies, architectures and elements
- identify and describe network testing and monitoring tools
- outline networking standards and protocols
- summarise threat mitigation strategies
- outline VLAN technologies.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the networking industry, and include access to:

- a site where complex network installation may be conducted
- hardware and software
- organisational guidelines
- computers
- local area network (LAN) and wide area network (WAN) systems, including voice and video hardware and software.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK613 Develop plans to manage structured troubleshooting process of enterprise networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to manage the maintenance of a complex integrated enterprise network to ensure availability and performance standard.

It applies to individuals with advanced information and communications technology (ICT) skills who are working in a wide range of roles including network specialists, network engineers, network infrastructure engineers, senior network administrators, network and systems managers, ICT security specialists, security engineers, communications engineers and communications managers.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan the strategies for structured troubleshooting and monitoring of enterprise networks	1.1 Develop strategies to monitor and manage an enterprise network to ensure availability and performance standard 1.2 Conduct equipment and skills audits as required 1.3 Evaluate the business value of service level agreements (SLAs), formal maintenance plans and monitoring procedures

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ELEMENT	PERFORMANCE CRITERIA
	against best practices for maintenance and fault procedures 1.4 Assign functional responsibilities to stakeholders according to the maintenance plan 1.5 Select and use appropriate network fault management tools and monitor and improve network performance
2. Manage and monitor structured troubleshooting strategies for complex enterprise networks	2.1 Implement structured network maintenance management processes and procedures in line with enterprise design plans and policies for ensuring high network reliability 2.2 Undertake risk assessment evaluation and rank threats for minimal impact 2.3 Develop and implement disaster recovery strategies for reliable contingencies and business continuity in a complex routing environment 2.4 Measure and analyse performance against an agreed baseline
3. Conduct structured network troubleshooting strategies	3.1 Analyse and troubleshoot layer 2 and 3 switch configuration to ensure the availability and resilience of a switched environment 3.2 Implement effective control of broadcast and multicast traffic in a switched environment 3.3 Analyse and troubleshoot scalable network layer connectivity with routing data structures and routing functions 3.4 Analyse and troubleshoot enterprise intra and internetwork routing protocols, architectures and processes 3.5 Analyse and troubleshoot route redistribution operations in inter-autonomous system routing architectures and processes 3.6 Test and manage internet protocol version 6 (IPv6) and version 4 (IPv4) addressing schema and verify internal and external internet protocol (IP) address translation standards 3.7 Analyse and troubleshoot communication filtering techniques, automated address allocation systems and IPv6 operational issues in the context of enterprise routing protocols 3.8 Analyse and troubleshoot wireless network configuration issues 3.9 Analyse and resolve network performance issues in an integrated voice or video network

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.3, 1.4, 2.1	• Identifies, analyses and evaluates complex text to determine all technical, regulatory and business requirements
Writing	1.1, 2.2, 2.3	• Develops a broad range of operational material for a specific audience, using clear and detailed language to convey explicit information, requirements and recommendations
Oral Communication	1.4	• Initiates and contributes to a range of complex conversations about technical concepts and issues relevant to personnel, responding, clarifying, explaining and expanding on information as required
Numeracy	1.2, 1.3, 2.4	• Interprets numerical data when testing plans for advanced network solutions, including taking measurements to evaluate performance and interoperability of network
Navigate the world of work	2.1	• Recognises protocols and policies that must be respected and maintained
Get the work done	1.1, 1.3-1.5, 2.1-2.4, 3.1-3.9	• Recognises the critical importance of clarifying, focussing and aligning goals and expectations, and may use the process to build ownership of and broad commitment to achieving outcomes • Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world and uses these to troubleshoot and understand the uses and potential of new technology • Is acutely aware of the importance of understanding, monitoring and controlling access to digitally stored and transmitted information • When dealing with complex issues, may use intuition to identify the general problem area, switching to analytical processes to generate possible solutions, depending on differing operational contingencies, risk situations and environments

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Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNWK613 Develop plans to manage structured troubleshooting process of enterprise networks	ICANWK613A Develop plans to manage structured troubleshooting process of enterprise networks	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK613 Develop plans to manage structured troubleshooting process of enterprise networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- analyse, document and troubleshoot a given complex network using industry methodologies and resources
- develop monitoring and management plans
- use networking and network fault management tools
- evaluate risk assessments and minimise threats on enterprise networks.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline benefits of a formal or structured approach to network management
- explain disaster recovery strategies
- summarise emerging viable business and social technologies
- outline enterprise network technologies, design plans and policies
- summarise enterprise network topologies, architectures and elements
- outline external developments or factors that affect network design
- explain internet protocol version 4 (IPv4) and internet protocol version 6 (IPv6) addressing configurations
- outline maintenance and fault procedures
- explain maintenance and management tools and practices suitable for complex networks
- outline networking standards and protocols
- summarise risk management strategies and practices suitable for a complex network environment
- clarify routing and routed protocols

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- outline routing and switching technologies for an enterprise environment
- summarise security for enterprise networks
- outline security standards and technologies for network environments
- explain service level agreements (SLAs)
- describe the value and process of conducting a skills audit
- explain troubleshooting and threat mitigation strategies.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the networking industry, and include access to:

- a location where the network configuration can be implemented
- routers and switches with appropriate operating systems
- computers
- suitable testing and analysis tools.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTNWK615 Design and configure desktop virtualisation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to design, and configure, the desktop virtualisation technologies needed to support an enterprise virtualisation business solution.

It applies to senior networking staff responsible for increasing the sustainability of an enterprise.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Networking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare the design specifications and plan to implement enterprise desktop environments	1.1 Research the available desktop virtualisation software vendors 1.2 Evaluate the desktop virtualisation environment 1.3 Analyse and compare, the features and components of desktop virtualisation environment 1.4 Identify the desktop-specific design objectives, requirements and limitations 1.5 Document the design infrastructure, according to the

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ELEMENT	PERFORMANCE CRITERIA
	enterprise requirements 1.6 Plan implementation and deployment, using the recommended design
2. Implement and configure the desktop virtualisation infrastructure and services	2.1 Assess the desktop virtualisation software and analyse its relevance to the enterprise requirements 2.2 Install and configure the desktop virtualisation environment 2.3 Implement specific features and functions, in order to provide suitable solutions to identified problems 2.4 Implement and manage the testing process 2.5 Apply desktop virtualisation technologies, to an accepted industry standard
3. Implement the application virtualisation	3.1 Plan the implementation and deployment of the application virtualisation software 3.2 Configure and test the application virtualisation system's components 3.3 Maintain, update and tune, the system's components

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.3, 2.1	• Organises, evaluates and critiques ideas, and information, from a wide range of complex texts
Writing	1.5, 3.1	• Demonstrates sophisticated writing skills by selecting the appropriate conventions and stylistic devices, to express the precise meaning
Navigate the world of work	1.5, 2.1, 2.5	• Works autonomously, making high-level decisions to achieve, and improve, organisational goals • Develops and implements strategies that ensure that organisational policies, procedures and regulatory requirements are being met
Get the work done	1.2-1.4, 1.6, 2.2-2.5, 3.2, 3.3	• Plans strategic priorities and outcomes within a flexible, efficient and effective context, in a diverse environment exposed to competing demands

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		• Makes high-impact decisions in a complex and diverse environment, using input from a range of sources • Identifies the key factors that impact on decisions and their outcomes, drawing on experience, competing priorities, and decision- making strategies, where appropriate • Uses digital technologies to manage business operations, and actively investigates new technologies for strategic and operational purposes

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTNWK615 Design and configure desktop virtualisation	ICANWK615A Design and configure desktop virtualisation	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTNWK615 Design and configure desktop virtualisation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- design, configure and manage the implementation of the virtualised enterprise desktop environment
- analyse and critically evaluate, the features and functions of the virtualised enterprise desktop environment
- plan, configure and maintain, the application virtualisation software.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- research current government and industry policies, and guidelines, relating to the development of efficient and reliable, information and communications technology (ICT) environments
- research the current technologies and processes designed to produce an efficient and reliable ICT environment
- determine the structure, functions and business organisation of the client
- identify and apply, the available tools and software applications required to manage the virtual desktop environment
- formulate the configuration of software applications required to manage the virtual desktop environment
- formulate the configuration required to integrate virtual machines into the existing network design.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the network industry, and include access to:

- a site where industry-specific technologies may be used
- industry-specific technologies currently used in the industry
- documents detailing workplace health and safety (WHS) standards, environmental guidelines and enterprise requirements.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTOPN403 Prepare activity plans and specifications for a fibre to the x installation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to prepare the activity plans and specifications required by field technical staff to deploy a fibre to the x (FTTx) installation for optical access networks.

It applies to individuals who work in a supervisory capacity within a team environment. They are technically skilled and integral to the delivery of a very high speed broadband through the access network for the National Broadband Network (NBN) initiative.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Optical Networks

Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for FTTx planning tasks	1.1 Obtain relevant legislation, codes, regulations and standards for compliance when conducting work 1.2 Scope work by obtaining project plan from appropriate personnel and arrange for site access to comply with security arrangements

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	1.3 Notify appropriate personnel of identified safety hazards at the worksite 1.4 Obtain tools and safety equipment and material to perform tasks safely and efficiently 1.5 Select and use required protective equipment and make site safe and secure for installation work 1.6 Identify and select plant and machinery for installation work activities
2. Plan FTTx activities and develop specifications	2.1 Follow work health and safety (WHS) and environmental requirements for given work and identify and avoid other services 2.2 Inspect proposed cable route visually according to cable plan and identify barriers to the cable installation 2.3 Modify cable plan, if required, and notify appropriate personnel 2.4 Prepare installation activities for FTTx provisioning according to project plan 2.5 Prepare installation specifications according to safe work practices and manufacturer's instructions to include optical fibre cable size, distribution area (DA), distribution joint including lead-in multiport serving area (DLMSA), enclosures, location of optical network terminations (ONT), location and type of fibre distribution hub (FDH) and optical splitter provisioning 2.6 Verify cable length from customer access network fibre centre to end-user ONT is within 20 km operating limit 2.7 Consult with appropriate personnel to confirm project scope, installation requirements and installation specifications according to project plan
3. Complete documentation and obtain sign-off	3.1 Complete and present updated planning activities documentation to authorised personnel 3.2 Complete and provide updated specification documentation to vendors for supply of material and resources 3.3 Submit documentation to appropriate person for approval and sign-off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description

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Reading	1.1, 2.2, 2.5, 2.7	• Interprets textual information from relevant sources to plan, identify all job requirements and adhere to procedures and standards
Writing	1.2, 1.3, 2.3, 2.7, 3.1, 3.2	• Accurately completes relevant reports and documentation using clear and technically specific language and numerical data
Oral Communication	1.2, 1.3, 2.3, 2.6, 2.7, 3.1	• Uses listening and questioning skills to confirm understanding of requirements, participates in a verbal exchange of ideas and solutions and uses appropriate, detailed and clear language to address key personnel and customers
Numeracy	2.6	• Uses simple mathematical equations to determine equipment and installation requirements
Navigate the world of work	1.1, 1.3-1.5, 2.1, 2.5	• Understands nature and purpose of own role and associated responsibilities and how it contributes to the work of others in the immediate work context • Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work context with specific reference to workplace safety
Interact with others	3.1-3.3	• Selects appropriate form, channel and mode of communication for a specific purpose relevant to own role
Get the work done	1.2, 1.4-1.6, 2.2, 2.4, 2.6, 2.7	• Takes responsibility for own workload, negotiating some key aspects with others • Develops plans to manage relatively complex, non-routine tasks with an awareness of how they may contribute to longer term operational and strategic goals • Makes decisions in relatively complex situations, taking a range of constraints into account • Recognises and takes responsibility for addressing predictable and some less predictable problems in familiar work contexts • Reflects on ways digital systems and tools are used, or could be used to achieve work goals and begins to recognise strategic as well as operational applications

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTOPN403 Prepare activity plans and specifications for a fibre to the x installation	ICTOPN4117A Prepare activity plans and specifications for a fibre to the x installation	Updated to meet standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTOPN403 Prepare activity plans and specifications for a fibre to the x installation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- determine the scope of the installation
- visually inspect proposed cable route
- prepare installation activities for fibre to x (FTTx) provisioning
- prepare and document FTTx designs and specifications and submit for approvals
- comply with all related work health and safety (WHS) requirements and work practices.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline properties of passive optical devices, including splitters and couplers
- identify FTTx installation equipment, including tools and safety equipment
- explain FTTx specifications
- outline legislative privacy, safety and environmental requirements including:
  - WHS requirements relating to handling of optical fibre and using laser optical sources
  - other personal safety issues
  - plant and equipment safety to be used in installation plans
  - discussion of manufacturer’s requirements for safe operation of equipment
- summarise operation of optical transmitters and receivers
- identify organisational policy and procedures relevant to this work
- discuss propagation of light in optical communication systems
- summarise the role of optical transmitters and receivers in optical communication systems
- explain the concept of wavelength division multiplexing (WDM)

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- discuss the importance of a knowledge of site engineering
- describe typical issues and challenges in preparing an activity plan for a site
- demonstrate a knowledge of the workplace and industry environment and their relationship to this work.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications \-– Optical Networks field of work and include access to:

- vendor product information and installation guides
- relevant regulatory and equipment documentation impacting installation activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTOPN501 Plan and configure dense wavelength division multiplexing systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to prepare activity plans and specifications required to deploy a dense wavelength division multiplexing (DWDM) optical network suitable for a metropolitan area network (MAN) or long haul applications.

It applies to individuals who work as members of a team and use high-level communication and technical skills to provide services in Next Generation Networks (NGN) using emerging technologies.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Optical Networks

Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for DWDM planning activities	1.1 Obtain relevant legislation, codes, regulations and standards for compliance when conducting work 1.2 Scope the work by obtaining project plan from appropriate personnel and arrange for site access to comply with security arrangements

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	1.3 Notify appropriate personnel of identified safety hazards at the worksite
2. Plan DWDM installation activities and develop specifications	2.1 Follow work health and safety (WHS) and environmental requirements for given work and identify and avoid other services 2.2 Identify tools, safety equipment, plant and machinery for installation work activities 2.3 Conduct physical inspections of proposed DWDM sites and verify backbone dark fibre is accessible and available according to cabling plan 2.4 Verify proposed backbone and customer fibre cable routes to splicing cabinet and fibre patch panel, and identify barriers to cable installation 2.5 Verify proposed power cabling route from distribution board and circuit breakers, and identify barriers to cable installation 2.6 Modify cable plan if required and notify appropriate personnel 2.7 Prepare fibre installation specifications and power cable and grounding specifications according to cabling plan and safe work practices and manufacturer's instructions 2.8 Verify proposed location of associated hardware racks, cabinets and ironwork, and confirm access to enterprise local area network (LAN)
3. Prepare DWDM shelf configuration and specifications according to customer requirements	3.1 Prepare a configuration document including configuration plans and specifications for the installation team 3.2 Specify location of DWDM shelves or racks and the shelf interconnection fibre cabling layout according to cabling plan 3.3 Specify individual DWDM units and circuit card types required to suit customer requirements
4. Plan preliminary optical tests	4.1 Verify backbone fibres at patch panel and conduct bidirectional optical time domain reflectometer (OTDR) test and record measurement results and OTDR images 4.2 Conduct bidirectional optical loss test set (OLTS) measurement of insertion loss on backbone fibres from patch panel to patch panel at adjacent sites and record measurement results
5. Complete documentation and obtain sign-off	5.1 Provide results of optical measurements to design team 5.2 Complete and provide updated specification documentation to installation team 5.3 Submit documentation to appropriate person for approval and sign-off

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 2.1, 2.3, 2.7, 3.2	• Interprets textual information from relevant sources to identify and plan for all job requirements and to adhere to procedures and standards
Writing	1.2, 1.3, 2.6, 3.1, 4.1, 4.2, 5.1, 5.2	• Accurately completes relevant reports and documentation using clear and technically specific language, numerical data and diagrammatic information
Oral Communication	1.2, 1.3, 2.6, 5.1	• Uses listening and questioning skills to confirm understanding for requirements, participates in a verbal exchange of ideas and solutions and uses appropriate, detailed and clear language to address key personnel, contractors, vendors and clients
Numeracy	2.7, 4.1, 4.2, 5.1	• Uses mathematical equations to evaluate technical data to calculate required settings and make adjustments
Navigate the world of work	1.1, 2.1, 2.7	• Understands how own role meshes with others and contributes to broader work goals • Monitors adherence to legal and regulatory rights and responsibilities with specific reference to safe industry practices
Interact with others	5.3	• Actively identifies requirements of important communication exchanges, selecting appropriate channels, format, tone and content to suit purpose and audience and monitoring impact
Get the work done	1.1, 1.2, 2.2-2.5, 2.8, 3.2, 3.3, 4.1, 4.2	• Develops plans to manage relatively complex, non-routine tasks with an awareness of how they may contribute to longer term operational and strategic goals • Makes a range of critical and non-critical decisions in relatively complex situations, taking a range of constraints into account • Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTOPN501 Plan and configure dense wavelength division multiplexing systems	ICTOPN5118A Plan and configure dense wavelength division multiplexing systems	Updated to meet standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTOPN501 Plan and configure dense wavelength division multiplexing systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- plan and develop all required dense wavelength division multiplexing (DWDM) installation activities according to all work health and safety (WHS) and job specifications
- prepare all DWDM shelf configurations and specifications
- plan preliminary optical tests
- complete project and acceptance documentations and submit for approval.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain configuration of DWDM shelf
- summarise principles of DWDM operations
- manage risk of electrostatic discharge
- summarise features and operating requirements of the following test equipment:
  - hand-held optical power meter
  - optical spectrum analyser
  - optical time domain reflectometer (OTDR)
  - transmission test set
- describe functions of an optical add drop multiplexer
- explain the role of the following in planning and configuration of DWDM systems internet protocol (IP) addressing:
  - subnet mask
  - dynamic host configuration protocol (DHCP)

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  - default gateway
- explain International Telecommunications Union (ITU) wavelength grid for DWDM
- identify optical fibre connector types and discuss their characteristics
- identify optical fibre types and discuss their characteristics
- explain path protection and protection switching
- summarise physical optical loopbacks and software loopbacks used to assist with testing DWDM systems
- identify protocols used on optical DWDM systems
- discuss the use of ring topologies and linear network topologies in DWDM system cable routes
- explain specific work health and safety (WHS) requirements that impact safe inspection of optical connectors and safe measurement of optical power from laser transmission systems.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications – Optical Networks field of work and include access to:

- test equipment currently used in industry
- manufacturer’s technical documentation
- relevant regulations and specifications.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTOPN502 Perform acceptance and commissioning tests on optical network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to conduct acceptance tests and commissioning tests on optical networks, including the optical portion of broadband hybrid fibre coaxial (HFC) networks, fibre to the x (FTTx) passive optical networks (PONs) and metropolitan and long haul dense wavelength division multiplexing (DWDM) networks.

It applies to individuals who work as members of a team and use high-level communication and technical skills to provide services in Next Generation Networks (NGN) using emerging technologies.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Optical Networks

Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to conduct	1.1 Obtain installation and commissioning documents and planning specifications from appropriate personnel to ensure installed optical

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acceptance tests	network is as planned and specified 1.2 Conduct visual inspection of new installation and verify system compliance against relevant legislation, codes, regulations and standards, and accepted industry practice 1.3 Select and obtain required test equipment for suitability of acceptance testing 1.4 Prepare acceptance schedule and test criteria in consultation with appropriate personnel
2. Conduct acceptance testing	2.1 Conduct and evaluate performance tests to ensure measurements meet with predetermined specifications and approved operating margins 2.2 Verify performance levels to be within tolerance specifications set in manufacturer's instructions 2.3 Test protection mechanisms to ensure performance criteria meets specified standard 2.4 Test alarms for satisfactory operation and refer identified problems to appropriate personnel for remedial action 2.5 Record all acceptance test procedures and results
3. Complete administrative tasks	3.1 Complete acceptance documentation including recommendations 3.2 Notify appropriate personnel and obtain sign-off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1, 1.2, 2.2, 2.3	• Interprets textual information from relevant sources, including equipment readings to identify and plan for all job requirements and adhere to procedures and standards
Writing	1.1, 1.4, 2.5, 3.1, 3.2	• Accurately completes relevant reports and documentation using clear and technically specific language and numerical data
Oral Communication	1.1, 1.4, 3.2	• Uses listening and questioning skills to confirm understanding for requirements, participates in a verbal exchange of ideas and solutions, and uses appropriate, detailed and clear language to address

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		key personnel
Numeracy	2.1	• Uses mathematical equations to evaluate technical data to determine measurements and any required calibration changes
Navigate the world of work	1.1, 1.2	• Understands how own role meshes with others and contributes to broader work goals • Monitors adherence to legal and regulatory rights and responsibilities
Interact with others	3.2	• Actively identifies requirements of important communication exchanges, selecting appropriate channels, format, tone and content to suit purpose and audience and monitoring impact
Get the work done	1.1, 1.3, 1.4, 2.3, 2.4	• Develops plans to manage relatively complex, non-routine tasks with an awareness of how they may contribute to longer term operational and strategic goals • Takes responsibility for high-impact decisions in complex situations involving many variables and constraints • Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world • Recognises and addresses some unfamiliar problems of increasing complexity within own scope, recognising when to seek the expertise of others

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTOPN502 Perform acceptance and commissioning tests on optical network	ICTOPN5119A Perform acceptance and commissioning tests on optical network	Updated to meet standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTOPN502 Perform acceptance and commissioning tests on optical network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- verify ‘as built’ installation against installation plans
- undertake acceptance and commissioning tests and analysis against specified installation and commissioning documents
- complete and submit all acceptance documentation incorporating test procedures, results and recommendations
- comply with all related work health and safety (WHS) requirements and work practices.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify cabling, terminations and supporting structures that may be encountered in the system under inspection
- outline common performance levels and standards
- describe electrical and optical properties to be measured
- explain health and safety issues appropriate to the work environment under inspection
- summarise typical network topologies, switching, routing and transmission techniques
- discuss transmission type and signals that may be encountered
- identify various test equipment types suitable for tests to be made.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications – Optical Networks field of work and include access to:

- testing equipment currently used in industry
- relevant regulatory and equipment documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTOPN503 Plan for an optical system upgrade and cut over

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to plan the activities of a major upgrade of optical systems from specifications provided by the planning and design section or its equivalent. Major upgrades in enterprise networks or a telecommunications service provider's network involve cut over activities to integrate additional work into the existing network.

It applies to individuals who work as members of a team and use high-level communication and technical skills to provide services in Next Generation Networks (NGN) using emerging technologies.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Optical Networks

Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Gather information to prepare upgrade activity plan	1.1 Obtain relevant legislation, codes, regulations and standards for compliance when conducting work 1.2 Obtain design specifications from the planning and design section to

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	determine scope and nature of the upgrade 1.3 Analyse the design specification and design plan, and determine accuracy of the design plan to site installation and requirements with customer 1.4 Determine network equipment types and obtain installation details from manufacturer 1.5 Prepare an equipment and component list and source vendors for procurement
2. Prepare upgrade activity plans	2.1 Prepare a detailed installation plan of the upgrade for the installer 2.2 Prepare a detailed installation procedure to carry out the upgrade to minimise impact to customer 2.3 Prepare pre-installation optical tests on existing equipment to determine benchmarks and performance levels prior to the upgrade 2.4 Prepare post-installation optical tests on upgrade to ensure upgraded system is achieving desired results 2.5 Prepare monitoring schedule to progressively assess upgrade progress 2.6 Prepare contingency plan for backing out if upgrade is not progressing according to schedule and disruptions to customer are excessive 2.7 Prepare cut over procedures
3. Complete documentation	3.1 Update documentation 3.2 Submit planning activity document for approval

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1, 1.3	• Interprets textual information from relevant sources to identify and plan for all job requirements and adhere to procedures and standards
Writing	1.5, 2.1, 2.2, 2.5-2.7, 3.1-3.2,	• Accurately completes relevant reports and documentation using clear and technically specific language, numerical data and

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		diagrammatic information
Oral Communication	1.2	• Uses listening and questioning skills to confirm understanding of requirements, participates in a verbal exchange of ideas and solutions and uses appropriate, detailed and clear language to address key personnel
Numeracy	2.3, 2.4, 2.6	• Uses mathematical equations to evaluate technical data • Uses basic arithmetic to determine work schedules
Navigate the world of work	1.1	• Understands how own role meshes with others and contributes to broader work goals • Monitors adherence to legal and regulatory rights and responsibilities with specific reference to safe industry practices
Interact with others	3.1, 3.2	• Actively identifies requirements of important communication exchanges, selecting appropriate channels, format, tone and content to suit purpose and audience and monitoring impact
Get the work done	1.1-1.5, 2.1-2.7	• Develops plans to manage relatively complex, non-routine tasks with an awareness of how they may contribute to longer term operational and strategic goals • Takes responsibility for high-impact decisions in complex situations involving many variables and constraints • Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world and uses these to troubleshoot and understand uses and potential of new technology • When dealing with complex issues, may use intuition to identify the general problem area, switching to analytical processes to clarify goals and key issues and using lateral thinking processes to generate possible solutions

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**

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Code and title current version	Code and title previous version	Comments	Equivalence status
ICTOPN503 Plan for an optical system upgrade and cut over	ICTOPN5120A Plan for an optical system upgrade and cut over	Updated to meet standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTOPN503 Plan for an optical system upgrade and cut over

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- prepare upgrade plan incorporating the following:
  - a detailed installation plan and installation procedures
  - pre-installation and post-installation test methods and results
  - a monitoring schedule to assess progress of the upgrade
  - a contingency plan.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain alarms and backup systems that apply to optical networks
- describe escalation and outage procedures
- explain network management systems
- outline fundamentals of telecommunications networks and equipment
- summarise telecommunications monitoring tools
- outline telecommunications test equipment and test setups
- evaluate telecommunications wiring practices
- explain upgrade and post-upgrade routines.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications – Optical Networks field of work and include access to:

- a site where upgrade and cut over may be planned
- equipment, software, test and monitoring equipment currently used in industry
- relevant regulatory, equipment, enterprise and vendor documentation that impacts work activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTOPN504 Test and commission a dense wavelength division multiplexing transmission system

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to test and commission optical transmission systems using dense wavelength division multiplexing (DWDM) technology.

It applies to individuals who work with telecommunications carriers, service providers, public utilities and broadcasting companies. They combine technical optical communications skills with broader organisational and administrative skills in a range of commercial contexts and environments.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Optical Networks

Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to commission DWDM transmission	1.1 Implement hazard risk control measures 1.2 Review system specifications and technical data by identifying system operating parameters

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system	1.3 Obtain and check tools and test equipment needed for the work 1.4 Verify all necessary equipment is installed, and circuit cards and filler cards are correctly located and seated 1.5 Check interconnecting fibres to optical multiplexers and shelves are intact and correctly routed 1.6 Establish communication between computer and DWDM shelf 1.7 Upload latest software release to each DWDM shelf in the network
2. Commission DWDM transmission system	2.1 Connect an optical test set and a physical optical loopback to the system, and select protocol compatible with DWDM hardware 2.2 Check connection status and that test set data is passing correctly 2.3 Monitor quality of received signal by setting performance monitoring (PM) features and retrieve PM counts 2.4 Verify no errors are counted by the test set during a long term stability test while customer input signal is set to the worst case (minimum) power level 2.5 Verify no alarms are generated during long term stability test period 2.6 Dispose of antistatic packaging to minimise environmental impact
3. Complete test and commissioning documentation	3.1 Finalise documentation on commissioning test results 3.2 Present results to appropriate person according to established procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.2, 3.2	• Interprets textual information from relevant sources to identify and plan for all job requirements and adhere to procedures and standards
Writing	3.1, 3.2	• Accurately completes relevant reports and documentation using clear and technically specific language and numerical data
Oral Communication	3.2, 3.2	• Uses listening and questioning skills to confirm understanding for requirements, participates in a verbal exchange of ideas and solutions, and uses

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		appropriate, detailed and clear language to address key personnel and clients
Numeracy	1.2, 2.3	• Uses mathematical equations to evaluate technical data and interpret results
Navigate the world of work	2.6, 3.2	• Takes full responsibility for following policies, procedures and legislative requirements, and identifies organisational implications of new legislation or regulation
Get the work done	1.1, 1.3-1.7, 2.1-2.6	• Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others taking into account capabilities, efficiencies and effectiveness • Monitors progress of plans and schedules and reviews and changes them to meet new demands and priorities

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTOPN504 Test and commission a dense wavelength division multiplexing transmission system	ICTOPN5121A Test and commission a dense wavelength division multiplexing transmission system	Updated to meet standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTOPN504 Test and commission a dense wavelength division multiplexing transmission system

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- plan and coordinate commissioning
- test and commission dense wavelength division multiplexing (DWDM) transmission system
- complete commissioning documentation.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain possible causes of alarms in long term stability test
- summarise principles of operation of DWDM
- explain standard electrostatic discharge precautions
- outline features and operating requirements of test equipment including:
  - a hand-held optical power meter
  - a transmission test set
  - an optical spectrum analyser
- describe functions of an optical add drop multiplexer
- explain how to set up the following:
  - internet protocol (IP) addressing
  - subnet mask
  - dynamic host configuration protocol (DHCP)
  - default gateway

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- summarise the International Telecommunications Union (ITU) wavelength grid for DWDM
- identify optical fibre connector types and characteristics
- identify optical fibre types and characteristics
- explain path protection and protection switching
- summarise physical optical loopbacks and software loopbacks
- describe protocols used on optical DWDM systems
- summarise ring topologies and linear network topologies
- outline specific health and safety requirements that impact the safe inspection of optical connectors and the safe measurement of optical power from laser transmission systems.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications – Optical Networks field of work and include access to:

- test equipment currently used in industry
- manufacturer's technical documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTOPN505 Test the performance of specialised optical devices

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to use specialised equipment for integration into existing optical networks or part of an upgrade for higher bandwidths required by services and applications of Next Generation Networks (NGN).

It applies to individuals who design and plan networks using emerging technologies and who work with telecommunications carriers, service providers, public utilities and broadcasting companies. They combine technical optical communications skills with broader organisational and administrative skills in a range of commercial contexts and environments.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Optical Networks

Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to test specialised optical devices	1.1 Obtain relevant legislation, codes, regulations and standards and follow work health and safety (WHS) and environmental requirements for the given work 1.2 Work safely according to relevant safety legislation and company work

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	practices, identifying hazards and using personal protective equipment 1.3 Determine type of optical device using the design plan and obtain manufacturer's specifications for testing 1.4 Determine test procedures and test equipment required to evaluate optical device suitability
2. Test specialised optical device	2.1 Set up test layout according to safe industry practice and connect specialised optical device into the test set-up 2.2 Undertake a test regime to determine performance characteristics of specialised optical device 2.3 Analyse test results to determine suitability and compatibility of optical device for integration into the network
3. Document performance of specialised optical device	3.1 Prepare evaluation report with recommendations on suitability of the specialised optical device 3.2 Present test results and evaluation report to appropriate person with copies filed for later reference according to organisation's policies

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1-1.3, 2.3, 3.2	• Interprets textual information from relevant sources to identify and plan for all job requirements and adhere to procedures and standards
Writing	3.1, 3.2	• Accurately completes standard reports and documentation using clear and technically specific language and numerical data
Oral Communication	3.2	• Uses listening and questioning skills to confirm understanding for technical and operational requirements, participates in a verbal exchange of ideas and solutions, and uses appropriate, detailed and clear language to address key internal and external personnel and clients
Numeracy	2.2, 2.3	• Uses mathematical formulae to evaluate technical data and interpret results
Navigate the	1.1, 1.2, 2.1, 3.2	• Works independently with a strong sense of responsibility and ownership of goals,

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world of world		plans, decisions and outcomes • Monitors adherence to legal and regulatory rights and responsibilities with specific reference to safe industry practices
Interact with others	3.2	• Actively identifies requirements of important communication exchanges, selecting appropriate channels, format, tone and content to suit purpose and audience and monitoring impact
Get the work done	1.1, 1.3, 1.4, 2.2	• Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others taking into account capabilities, efficiencies and effectiveness • Takes responsibility for high impact decisions in complex situations involving many variables and constraints • Actively identifies systems, devices and applications with potential to meet current and/or future needs • When dealing with complex issues, may use intuition to identify the general problem area, switching to analytical processes to clarify goals and key issues, using lateral thinking processes to generate possible solutions

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTOPN505 Test the performance of specialised optical devices	ICTOPN5122A Test the performance of specialised optical devices	Updated to meet standards for Training Packages	Equivalent Unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTOPN505 Test the performance of specialised optical devices

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- plan and coordinate test activities and equipment
- test specialised optical devices and determine suitability for integration into a network
- analyse test results
- report and make recommendations on suitability for integration
- comply with all work health and safety (WHS) requirements and work practices.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain what an amplified spontaneous emission (ASE) source test shows
- summarise attenuation characteristics of optical fibres
- outline the principles of operation for dense wavelength division multiplexing (DWDM)
- identify features and operating requirements of test equipment including:
  - a hand-held optical power meter
  - an optical spectrum analyser
  - a transmission test set
- outline dispersion characteristics of various fibres
- describe dispersion compensation devices
- explain standard electrostatic discharge precautions
- outline functions of an optical add-drop multiplexer (OADM) and reconfigurable optical add-drop multiplexer (ROADM)
- explain gain equalisation

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- summarise the International Telecommunications Union (ITU) wavelength grid for DWDM
- describe the measurement of dispersion
- explain optical amplifier operation
- name optical fibre connector types and describe their characteristics
- list optical fibre types and describe their characteristics
- explain ‘optical return loss’ (ORL)
- clarify path protection and protection switching
- explain polarisation dependent loss (PDL)
- identify protocols used on optical DWDM systems
- explain reflectance in optical systems
- summarise ring topologies and linear network topologies
- explain specific work health and safety (WHS) requirements that impact the safe inspection of optical connectors and the safe measurement of optical power from laser transmission systems
- discuss tuneable laser sources and their characteristics.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications – Optical Networks field of work and include access to:

- test equipment currently used in industry
- manufacturer’s technical documentation, legislation, codes and standards.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTOPN506 Analyse and integrate specialised optical devices in the network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to analyse and integrate specialised optical devices into existing optical networks to support higher bandwidths associated with Next Generation Networks (NGN).

It applies to individuals who work for telecommunications carriers, service providers or other private and public organisations, who have experience in optical transmission. They combine technical expertise with a range of analytical, research and planning skills to develop integration solutions for particular business needs.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Optical Networks

Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Analyse specialised optical device and prepare for integration in the	1.1 Obtain relevant legislation, codes, regulations and standards and follow work health and safety (WHS) and environmental requirements for the project work 1.2 Work safely according to relevant safety legislation and company

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network	work practices, identifying hazards and using personal protective equipment 1.3 Obtain plans and drawings of existing optical network from appropriate person and review potential locations for suitability of integrating additional hardware 1.4 Analyse and evaluate a range of integration options using device specifications which satisfy the customer's network requirements 1.5 Prepare and submit the business case for adopting recommended integration solution 1.6 Prepare design plan with interconnection details to existing system and installation options and seek approval to proceed from customer 1.7 Undertake an impact risk assessment of the hardware integration with the network operations centre (NOC) and prepare for contingencies using contingency plan
2. Integrate specialised optical device in the network	2.1 Install and integrate specialised optical devices into existing network according to design plan 2.2 Test the network and evaluate results to verify optical network performance with integrated specialised optical devices in operation
3. Document integration of the specialised optical device in dense wavelength division multiplexing (DWDM) network	3.1 Produce an updated design plan and submit to customer with copies filed for later reference according to organisation's policies 3.2 Prepare an evaluation report on network performance with specialised optical devices with recommendations for future enhancements 3.3 Notify NOC of job completion and obtain sign-off from appropriate person

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1, 1.2, 1.4, 1.7, 2.1, 3.1	• Interprets textual information from relevant sources to identify and plan for all job requirements and adhere to procedures and standards

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Writing	1.5, 1.6, 3.1, 3.2, 3.3	• Accurately completes standard reports and documentation using clear and technically specific language and numerical data
Oral Communication	1.5, 1.6, 3.3	• Uses listening and questioning skills to confirm understanding for technical requirements • Participates in a verbal exchange of ideas and solutions and uses appropriate, detailed and clear language to address key personnel and clients
Numeracy	2.2	• Uses mathematical formulae to evaluate technical data and interpret results
Navigate the world of work	1.1, 1.2, 3.1	• Works independently within workplace parameters with a strong sense of responsibility and ownership of goals, plans, decisions and outcomes • Monitors adherence to legal and regulatory rights and responsibilities with specific reference to safe industry practices
Interact with others	3.3	• Actively identifies requirements of important communication exchanges, selecting appropriate channels, format, tone and content to suit purpose and audience and monitoring impact
Get the work done	1.1, 1.3-1.7, 2.1, 2.2	• Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others taking into account capabilities, efficiencies and effectiveness • Takes responsibility for high-impact decisions in complex situations involving many variables and constraints • Actively identifies systems, devices and applications with potential to meet current and/or future needs • When dealing with complex issues, may use intuition to identify the general problem area, switching to analytical processes to clarify goals and key issues and using lateral thinking processes to generate possible solutions

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTOPN506 Analyse and integrate specialised optical devices in the network	ICTOPN5123A Analyse and integrate specialised optical devices in the network	Updated to meet standards for Training Packages	Equivalent Unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTOPN506 Analyse and integrate specialised optical devices in the network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- analyse a specialised optical device and prepare a design to integrate it with a network
- integrate and test the device
- document integration to the network and recommend enhancements
- submit relevant documentation to appropriate personnel
- comply with all related work health and safety (WHS) requirements and work practices.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain attenuation characteristics of optical fibres
- summarise principles of operation of dense wavelength division multiplexing (DWDM)
- describe features and operating requirements of test equipment, including:
  - a hand-held optical power meter
  - an optical spectrum analyser
  - a transmission test set
- discuss dispersion characteristics of optical fibres
- explain the role of dispersion compensation devices
- explain standard electrostatic discharge precautions
- explain functions of an optical add-drop multiplexer (OADM) and reconfigurable optical add-drop multiplexer (ROADM)
- explain gain equalisation

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- summarise the International Telecommunications Union (ITU) wavelength grid for DWDM
- explain the measurement of dispersion in optical systems
- summarise optical amplifier operation
- identify optical fibre connector types and characteristics
- identify optical fibre types and characteristics
- outline optical return loss (ORL)
- explain path protection and protection switching
- clarify protocols used on optical DWDM systems
- explain the role of reflectance in optical systems
- explain ring topologies and linear network topologies
- explain specific WHS requirements that impact the safe inspection of optical connectors and the safe measurement of optical power from laser transmission systems
- describe tunable laser sources and their characteristics.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications – Optical Networks field of work and include access to:

- test equipment currently used in industry
- manufacturer's technical documentation, legislation, codes and standards.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTOPN601 Manage optical ethernet transmission

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to manage an ethernet optical transmission system. It includes analysis of fault conditions that may occur.

It applies to individuals who work as members of a team with carrier telecommunications networks using optical technologies. Individuals in these roles are excellent communicators and skilled technicians.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Optical Networks

Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan to test optical ethernet link	1.1 Make worksite safe by identifying existing and potential site hazards 1.2 Determine the technical environment and network components 1.3 Report on infrastructure to ensure link is designed to meet performance requirements

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2. Specify architecture requirements	2.1 Follow site specific safety requirements and enterprise work health and safety (WHS) procedures 2.2 Determine architecture components 2.3 Determine functions and framework for the system to operate across network boundaries, taking into account performance criteria
3. Manage optical ethernet link	3.1 Conduct work in context of appropriate tests 3.2 Analyse test results 3.3 Provide a report on test results and compare with expected outcomes 3.4 Document test results and refer to appropriate person

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	2.1, 2.3, 3.2	• Interprets textual information from relevant sources to identify and plan for all job requirements and adhere to procedures and standards
Writing	1.3, 3.3, 3.4	• Accurately completes standard reports and documentation using clear and technically specific language and numerical data
Oral Communication	1.3	• Uses listening and questioning skills to confirm understanding of technical and operational requirements • Participates in a verbal exchange of ideas and solutions and uses appropriate, detailed and clear language to address internal and external personnel and clients
Numeracy	3.2	• Uses mathematical formulae to evaluate technical data and interpret results
Navigate the world of work	1.1, 2.1, 3.1	• Works independently within parameters with a strong sense of responsibility and ownership of goals, plans, decisions and outcomes • Monitors adherence to legal and regulatory

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		rights and responsibilities with specific reference to safe industry practices
Interact with others	3.4	• Actively identifies requirements of important communication exchanges, selecting appropriate channels, format, tone and content to suit purpose and audience and monitoring impact
Get the work done	1.2, 2.2, 2.3	• Sequences and schedules complex activities, monitors implementation and manages relevant communication • Takes responsibility for high-impact decisions in complex situations involving many variables and constraints • Actively identifies systems, devices and applications with potential to meet current and/or future needs

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTOPN601 Manage optical ethernet transmission	ICTOPN6124A Manage optical ethernet transmission	Updated to meet standards for Training Packages	Equivalent Unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTOPN601 Manage optical ethernet transmission

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- identify test performance parameters
- plan the test from performance requirements
- select and perform a testing regime on ethernet optical transmissions
- analyse and document test results
- comply with all work health and safety (WHS) requirements and work practices.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe intricacies of optical ethernet systems including:
  - application in optical systems
  - system architecture
  - function and framework within a telecommunications environment
  - organisational policies and procedures
  - appropriate testing techniques and analysis
- explain specific work health and safety (WHS) requirements relating to:
  - handling of optical fibre
  - personal safety issues
  - use of laser light sources.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications – Optical Networks field of work and include access to:

- test equipment currently used in industry
- manufacturer's technical documentation, legislation, codes and standards.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTOPN602 Manage dense wavelength division multiplexing transmission system

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to manage a dense wavelength division multiplexing (DWDM) transmission system using graphical user interface (GUI) management software.

It applies to individuals who use high-level technical skills and network management software to manage network operations. It is often carried out at a central Network Operations Centre (NOC).

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Optical Networks

Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to manage transmission system	1.1 Determine networking issues and requirements from appropriate person 1.2 Install network management software according to vendor instructions, including access, security and administration

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	1.3 Create a customised representation of the enterprise's network topology 1.4 Set and configure thresholds for performance monitoring 1.5 Prepare a plan to integrate the DWDM management system into a broader network management system where applicable
2. Manage transmission system	2.1 Manage network using appropriate communications links 2.2 Monitor network for faults and performance and produce a fault and performance report
3. Use network management to report on the overall state of transmission system	3.1 Analyse performance monitoring data and alarm data 3.2 Prepare report and make recommendations based on analysis 3.3 Report on network degradation over a period of time

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 3.1	• Interprets textual information from relevant sources to identify and plan for all job requirements and adhere to procedures and standards
Writing	2.2, 3.2, 3.3	• Accurately completes standard reports and documentation using clear and technically specific language, numerical data and diagrammatic information
Oral Communication	1.1, 1.2, 3.3	• Uses listening and questioning skills to confirm technical and operational requirements and participates in a verbal exchange of ideas and solutions and uses appropriate, detailed and clear language to address key personnel and clients
Numeracy	1.4, 3.1	• Uses mathematical equations to evaluate technical data and determine acceptable monitoring levels
Get the work done	1.1-1.5, 2.1, 2.2	• Sequences and schedules complex activities, monitors implementation and manages relevant communication • Takes responsibility for high-impact decisions in complex situations involving many variables and constraints • Uses nuanced understanding of context to recognise

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		anomalies and subtle deviations to normal expectations, focusing attention on critical issues and variables • Uses a broad range of features within applications to improve personal productivity including optimising software functions for specific purposes

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTOPN602 Manage dense wavelength division multiplexing transmission system	ICTOPN6125A Manage dense wavelength division multiplexing transmission system	Updated to meet standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTOPN602 Manage dense wavelength division multiplexing transmission system

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- determine network parameters and set up performance monitoring
- manage network using appropriate software and tools
- monitor network for faults and performance
- produce fault and performance report
- analyse performance monitoring and alarm data
- prepare report with recommendations based on analysis.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- discuss workplace and industry environment relevant to dense wavelength division multiplexing (DWDM)
- outline optical communications principles
- explain DWDM technology, its operation and testing principles
- summarise simple network management protocol (SNMP)
- explain organisational policies and procedures relevant to the DWDM
- determine appropriate report formats and communications tools required to make recommendations on performance and network degradation.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications – Optical Networks field of work and include access to:

- DWDM system and test equipment currently used in industry
- relevant equipment manuals, software manuals and other procedural documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTOPN603 Design a dense wavelength division multiplexing system

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to design a high-capacity dense wavelength division multiplexing (DWDM) optical network suitable for a metropolitan area network (MAN) or long haul applications.

It applies to individuals who are skilled technicians and excellent communicators who use optical technologies for the deployment of high capacity networks. The work involves link budget design and providing specification details for configuration and commissioning teams.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Optical Networks

Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to produce a DWDM system design	1.1 Obtain the planning document from appropriate person and determine site details 1.2 Obtain the service type and number of channels required between customer traffic sources and destinations and the type of protection

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	required 1.3 Obtain specifications of optical fibre between sites 1.4 Determine fibre loss between sites
2. Calculate link budget for each wavelength path	2.1 Use vendor's engineering design rules, specifications and data to calculate link budget and link margin for each DWDM wavelength and path 2.2 Evaluate link budget and assess calculated margin and make recommendations for improvement if warranted 2.3 Analyse specifications of installed optical fibre and determine if dispersion will limit the maximum traffic data rate 2.4 Generate options for system design that are realistic for the enterprise and network 2.5 Evaluate and select preferred option based on enterprise business strategy outcomes, service policy and compliance with relevant legislation 2.6 Discuss and confirm selected option with customer
3. Prepare detailed configuration documents for the DWDM system	3.1 Outline detailed requirements of the DWDM system for configuration document 3.2 Prepare a configuration document according to customer's traffic needs 3.3 Prepare an internet protocol (IP) address allocation for all DWDM shelves and associated routers and gateways 3.4 Submit documentation to appropriate person for approval and sign off
4. Investigate upgrade options using emerging technologies	4.1 Investigate option of using a reconfigurable optical add-drop multiplexer (ROADM) and make recommendations outlining benefits 4.2 Investigate feasibility of a future upgrade up to 100 Gbps system using optical transport network (OTN) - DWDM technology

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**

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Reading	2.1, 2.3, 2.5	• Interprets textual information from relevant sources to identify and plan for all job requirements and adhere to procedures and standards
Writing	1.1, 2.2, 2.4, 3.1, 3.2, 3.4, 4.1	• Accurately prepares project briefs, technical documentation and reports using clear and technically specific language, numerical data and diagrammatic information
Oral Communication	1.1, 2.2, 2.6, 4.1	• Uses listening and questioning skills to confirm technical and operational requirements and participates in a verbal exchange of ideas and solutions and uses appropriate, detailed and clear language to address installation personnel, vendors, customers and contractors
Numeracy	1.4, 2.1, 2.2, 2.3	• Uses mathematical equations to evaluate all relevant technical data
Navigate the world of work	2.5	• Monitors adherence to legal and regulatory rights and responsibilities
Interact with others	3.4	• Actively identifies requirements of important communication exchanges, selecting appropriate channels, format, tone and content to suit purpose and audience and monitoring impact
Get the work done	1.1-1.4, 2.2, 2.4, 2.5, 3.3, 4.1, 4.2	• Understands key principles and concepts underpinning the design and operation of digital systems and tools and applies these when seeking to understand the potential of new technology • Takes responsibility for defining key aspects of workload, balancing own needs and priorities with job requirements • Takes responsibility for high-impact decision in complex situations involving many variables and constraints • Recognises and addresses complex problems involving multiple variables

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTOPN603 Design a dense wavelength division multiplexing system	ICTOPN6128A Design a dense wavelength division multiplexing system	Updated to meet standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTOPN603 Design a dense wavelength division multiplexing system

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- determine fibre loss between sites
- calculate link budget and link margin
- prepare dense wavelength division multiplexing (DWDM) shelf configuration and specifications
- produce configuration documentation
- investigate an emerging DWDM technology.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain the configuration of DWDM shelf
- outline operation principles of DWDM
- clarify electrostatic discharge
- identify features and operating requirements of test equipment including:
  - an optical time domain reflectometer (OTDR)
  - a hand-held optical power meter
  - a transmission test set
  - an optical spectrum analyser
- describe functions of an optical add-drop multiplexer (OADM)
- summarise functions of reconfigurable optical add-drop multiplexer (ROADM)
- explain internet protocol (IP) addressing, subnet mask, dynamic host configuration protocol (DHCP) and default gateway

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- summarise International Telecommunications Union (ITU) wavelength grid for DWDM
- explain laser stability
- identify dispersion compensation devices
- describe the importance of a link budget and calculate a link margins
- identify optical fibre connector types and characteristics
- identify optical fibre types and characteristics
- discuss path protection and protection switching
- explain physical optical loopbacks and software loopbacks
- summarise traditional protocols and emerging Optical Transport Network (OTN) technologies used on optical DWDM systems
- describe ring topologies and linear network topologies
- explain specific work health and safety (WHS) requirements that impact the safe inspection of optical connectors and the safe measurement of optical power from laser transmission systems.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications – Optical Networks field of work and include access to:

- manufacturer’s technical documentation
- relevant regulations
- system specifications.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTOPN604 Analyse optical transmission systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to verify the characteristics of Next Generation Networks (NGN) to ensure they will support the new modulation requirements of the equipment.

It applies to individuals who are experienced technicians from telecommunications carriers, service providers, or other private and public organisations, who have experience in the optical transmission area.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Optical Networks

Elements and Performance Criteria

Element	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to conduct characterisation tests on existing optical network	1.1 Obtain relevant legislation, codes, regulations and standards and follow work health and safety (WHS) and environmental requirements for the given work 1.2 Identify hazards and work safely according to relevant safety legislation and company work practices using personal protective equipment

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	1.3 Construct test procedures for each test to be conducted 1.4 Notify customer and arrange for site access
2. Conduct link characterisation tests and analyse existing optical network	2.1 Perform optical tests to characterise existing fibre link 2.2 Analyse results of optical tests, and determine extent and nature of future upgrades based on the tests
3. Document analysis of optical network with recommendations	3.1 Produce final drawings and plans of proposed upgrade requirements for optical transmission and submit to project manager according to enterprise policy 3.2 Prepare report on measured performance of the network and recommendations on future upgrades

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1, 3.1	• Interprets textual information from relevant sources to identify and plan for all job requirements and adhere to procedures and standards
Writing	1.2, 1.4, 3.1, 3.2	• Accurately prepares standard documentation using clear and technically specific language, numerical data, drawings and plans
Oral Communication	1.4	• Uses listening and questioning skills to confirm technical and operational requirements and participates in a verbal exchange of ideas and solutions and uses appropriate, detailed and clear language to address team members, supervisors and customers
Numeracy	2.2	• Uses mathematical equations to evaluate all relevant technical data
Navigate the world of work	1.1, 1.2, 3.1	• Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work, with specific reference to workplace safety • Understands main tasks, responsibilities

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		and boundaries of own work
Get the work done	1.3, 2.1, 2.2	• Develops plans to manage relatively complex, non-routine tasks with an awareness of how they may contribute to longer term operational and strategic goals • Makes a range of critical and non-critical decisions in relatively complex situations, taking a range of constraints into account • Recognises and addresses complex problems involving multiple variables • Actively identifies systems, devices and applications with potential to meet current and/or future needs

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) should be included.

Measurements that must be conducted include:	• optical time-domain reflectometer (OTDR) testing from both ends • optical loss test set (OLTS) • optical return loss (ORL) • chromatic dispersion (CD) • polarisation mode dispersion (PMD) • non-linearity (four wave mixing) • optical signal-to-noise ratio (OSNR)

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTOPN604 Analyse optical transmission systems	ICTOPN6129A Analyse optical transmission systems	Updated to meet Standards for Training Packages.	Equivalent unit

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Assessment Requirements for ICTOPN604 Analyse optical transmission systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- conduct optical transmission measurements
- analyse complex optical measurement results
- liaise with the customer as required.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- list and describe legislative and regulatory frameworks that govern optical transmission systems
- list and describe work health and safety (WHS) and environmental issues associated with optical transmission systems
- describe attenuation characteristics of optical fibres
- summarise the chromatic dispersion (CD) test
- explain principles of operation of dense wavelength division multiplexing (DWDM)
- discuss dispersion and outline dispersion characteristics of various fibres and devices used for compensation
- discuss precautions required to minimise electrostatic discharge
- identify features and operating requirements of test equipment including:
  - a hand-held optical power meter
  - an optical spectrum analyser
  - a transmission test set

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- identify functions of an optical add-drop multiplexer (OADM) and reconfigurable optical add-drop multiplexer (ROADM)
- explain gain equalisation
- describe the insertion loss test
- summarise the International Telecommunications Union (ITU) wavelength grid for DWDM
- discuss measurement of dispersion
- summarise methods to reduce dispersion
- discuss optical amplifier operation
- identify optical fibre connector types and characteristics
- identify optical fibre types and characteristics
- summarise the optical return loss (ORL) test
- outline the optical signal-to-noise ratio (OSNR) test
- discuss the optical time domain reflectometer (OTDR) test
- clarify path protection and protection switching
- explain performance qualification of 40 Gbit/s and 100 Gbit/s transceivers
- summarise the polarisation mode dispersion (PMD) test
- outline protocols used on optical DWDM systems
- explain reflectance in fibre optic systems
- discuss ring topologies and linear network topologies
- explain specific work health and safety (WHS) requirements and environmental constraints that impact safe inspection of optical connectors and safe measurement of optical power from laser transmission systems.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications – Optical Networks field of work and include access to:

- test equipment currently used in industry
- test equipment and manufacturer’s technical documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPMG202 Plan, organise and undertake work activities

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to plan, organise and undertake work activities in a telecommunications environment, including voice, video and data networks in domestic, commercial or industrial installations.

It applies to individuals who plan, organise and undertake work on client premises and who may be part of a project team responsible for cabling equipment deployment in network infrastructure, such as broadband provisioning, wireless mobile and data networks.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – project management

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to undertake work activities	1.1 Prepare work requirements from job request or work orders and confirm with appropriate parties, including client and other appropriate parties and/or by site inspection 1.2 Apply and monitor work health and safety (WHS) standards, statutory requirements, relevant legislation, codes, regulations and

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	standards, and enterprise procedures throughout work procedure 1.3 Procure resources required to satisfy job plan for compliance with job specifications 1.4 Coordinate requirements, including requests for equipment isolation, with others involved or affected by the work according to enterprise requirements
2. Coordinate and undertake work	2.1 Coordinate work activities with appropriate parties according to enterprise procedures, and job and environmental requirements 2.2 Undertake and monitor tasks to comply with plans, work requirements and enterprise procedures
3. Complete work	3.1 Finalise work and restore worksite according to enterprise procedures and job requirements 3.2 Notify appropriate parties of work completion according to enterprise procedures and job requirements 3.3 Complete job records, costing data and necessary reports according to enterprise procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance criteria**	**Description**
Reading	1.2, 2.1, 2.2, 3.1	• Recognises and interprets visual and written text in a variety of forms to determine key information and job requirements
Writing	1.1, 1.3, 1.4, 2.1, 3.2, 3.3	• Develops material for a specific audience using clear and detailed language to convey explicit information
Oral Communication	1.1-1.4, 2.1, 3.2	• Explains information using relevant language suitable for specific audiences
Numeracy	3.3	• Uses basic mathematical calculations to determine job requirements and costs
Navigate the world of work	1.2, 1.4, 2.1, 2.2, 3.1-3.3	• Recognises and follows explicit and implicit protocols and meets expectations associated with own role • Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own

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		work context with specific reference to workplace safety
Get the work done	1.1, 1.3, 1.4, 2.1	• Plans a range of routine tasks, accepting goals and aiming to achieve them efficiently • Implements standard procedures for routine decisions • Recognises and takes responsibility for addressing predictable and some less predictable problems in familiar work contexts • Understands the purpose and specific functions of common digital tools used in some work contexts

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTPMG202 Plan, organise and undertake work activities	ICTPMG2173A Plan, organise and undertake work activities	Updated to meet Standards for Training Packages	Equivalent unit

Links

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Assessment Requirements for ICTPMG202 Plan, organise and undertake work activities

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- plan and prepare for work activities
- coordinate and undertake work activities, applying all related work health and safety (WHS) requirements and work practices
- complete all documents and reports for work activities according to organisation procedures
- demonstrate alignment with job request and consideration of client needs.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify appropriate tools, plant, equipment and materials required to do the work
- describe enterprise permit procedures and recording procedures
- identify and describe WHS requirements for work activities
- identify relevant engineering and design practices and procedures
- identify relevant statutory requirements
- explain the team communication process and goals
- list personal time management techniques
- outline work planning and organisation theory.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – project management field of work and include access to:

- sites on which work may be conducted
- equipment currently used in industry
- relevant regulatory and organisational procedures and equipment documentation that impact on the work undertaken.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPMG402 Schedule installation of customer premises equipment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge to effectively schedule the installation of customer premises equipment (CPE), including planning, provisioning and monitoring of customer premises installations.

It applies to individuals with a range of telecommunications skills, involves a degree of autonomy and may include limited supervision of others.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – project management

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan installation project	1.1 Obtain relevant legislation, codes, regulations and standards, and follow work health and safety (WHS) and environmental requirements for given work 1.2 Plan work schedules for relevant parties to provision services and

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	deliverables in correct sequence for satisfactory project completion within specified timeframe 1.3 Order materials in advance of needs to avoid work delays 1.4 Negotiate provision and connection of required network capacity and facilities with network provider 1.5 Determine customer equipment types and quantities, and organise timing of delivery according to work schedule timeframe 1.6 Determine essential criteria for selecting labour resources to satisfy regulatory, enterprise and customer requirements 1.7 Calculate installation workloads to complete task within specified timeframe
2. Provision resources for installation project	2.1 Arrange for connection of network services to customer equipment 2.2 Coordinate logistics associated with delivery of material to site according to installation timeframe 2.3 Allocate labour to installation as determined in planning stage 2.4 Ensure that all installation personnel are advised of installation and customer requirements
3. Monitor and adjust resource allocations	3.1 Adjust labour resources as necessary to meet budget and completion timeframe 3.2 Monitor work progress against project schedules and budgets

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Reading	1.1, 1.5, 1.6	• Analyses and interprets various textual material to determine key information, requirements and responsibilities • Researches relevant codes and standards to ensure latest requirements, regulations and standards are adhered to
Writing	1.2, 1.4, 1.5, 1.6, 2.1, 2.2, 2.4	• Develops material for a specific audience using clear and detailed language to convey explicit information
Oral Communication	1.4, 1.5, 1.6, 2.1, 2.2, 2.3, 2.4	• Explains information using relevant language suitable for specific audiences
Numeracy	1.7, 2.2, 2.3, 3.2	• Uses mathematical calculations to determine staffing and logistical requirements and to plan

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		for the future
Navigate the world of work	1.1, 1.6	• Recognises and follows explicit and implicit protocols and meets expectations associated with own role • Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work context with specific reference to workplace safety
Get the work done	1.1, 1.2, 1.3, 1.5, 1.6, 1.7, 2.1, 2.2, 2.3, 3.1, 3.2	• Applies formal processes when planning more complex tasks, producing plans with logically sequenced steps, and reflecting some awareness of time and resources constraints • Implements standard decisions for routine tasks • Initiates standard procedures when responding to familiar problems within the immediate context • Recognises general design and operating principles of digital tools and uses this information when planning the installation of new technologies

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTPMG402 Schedule installation of customer premises equipment	ICTPMG4048A Schedule installation of customer premises equipment	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPMG402 Schedule installation of customer premises equipment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- access relevant information and plan an installation project
- schedule work for the installation team according to the plan
- organise supply of materials in a timely manner
- arrange for connection of network services
- monitor and apply contingencies if required.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- discuss the importance and requirements of Australian Communications and Media Authority (ACMA) licensing
- outline the use of computers and application of software programs used in the telecommunications industry
- outline industry cabling practices
- identify work health and safety (WHS) procedures
- outline the stages of project management including:
  - phases of project management
  - roles and responsibilities within project management
  - project reporting
- identify telecommunications components and assemblies
- identify telecommunications customer premises equipment (CPE).

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – project management field of work and include access to:

- a work site where scheduling may be conducted
- relevant hardware and software.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPMG403 Manage the delivery of network infrastructure

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to manage the delivery of network infrastructure, including scoping the project, developing a project brief, managing the project and directing the activities of installation staff, building workers, contractors, manufacturers and vendors.

It applies to individuals who work in appropriate project management roles associated with access and core networks, including switching and transmission via optical fibre, radio, microwave and satellite.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – project management

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Scope network infrastructure requirements	1.1 Determine requirements of project from client and approved network plan 1.2 Assess current access network conditions to determine existing

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	network capacity and capability 1.3 Analyse site survey data and geographical information where necessary to assess suitability of site to design requirements 1.4 Assess risk of barriers to plan realisation to ensure delivery of network infrastructure project is achievable 1.5 Analyse impact on planning of relevant legislation and associated operational codes 1.6 Produce scoping document with consideration to new technology or technology features required in project
2. Develop project brief	2.1 Develop planning options considering current and new technology, facilities, features, and present and future needs 2.2 Conduct cost-benefit studies to guide decision making processes according to sound business practice 2.3 Discuss project brief with client, as required, and obtain approval of planning options 2.4 Produce planning specifications relating to location, route, area, product and/or platform 2.5 Estimate timing, costing and operating budget according to enterprise policy 2.6 Prepare final project brief and present to operational staff for implementation
3. Manage project	3.1 Define roles and responsibilities of stakeholders within terms of project 3.2 Establish reporting and communications line to ensure project is effectively managed 3.3 Review and continually monitor progress of project against deliverables and timelines, and invoke contingencies if required 3.4 Complete project documents in line with enterprise standards and guidelines

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**

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Reading	1.1, 1.3, 1.5, 1.6, 3.3, 3.4	• Interprets and comprehends visual and written content in a variety of forms to determine key information, requirements and responsibilities • Researches relevant codes and standards to ensure latest requirements, regulations and standards are adhered to
Writing	1.6, 2.1, 2.3-2.6, 3.2, 3.4	• Develops accurate technical documents for a specific audience using clear and specific instructions and data in a format and sequence that convey explicit information
Oral Communication	2.3, 2.6, 3.1, 3.2	• Elicits the views and opinions of others using listening and questioning skills • Clearly articulates information using relevant language with a level of negotiation
Numeracy	1.3, 2.2, 2.4, 2.5, 3.3	• Uses mathematical equations to estimate and cost numerical information • Uses financial analysis skills to identify potentially misleading information, review financial outcomes and develop material based on verified data
Navigate the world of work	1.5, 2.5, 3.4	• Monitors adherence to legal and regulatory rights and responsibilities, and organisational policies and procedures, and considers own role in terms of its contribution to the broader goals of the work environment
Interact with others	2.6	• Selects the appropriate form, channel and mode of communication for a specific purpose
Get the work done	1.1-1.4, 1.6, 2.1, 2.4, 2.5, 3.1-3.3	• Plans a range of routine tasks, accepting stated goals and aiming to achieve them efficiently • Takes responsibility for the outcomes of routine decisions related directly to own role • Recognises and anticipates an increasing range of familiar problems, their symptom and causes, actively looking for early warning signs and implementing contingency plans • Reflects on the ways in which digital systems and tools are used or could be used to achieve work goals, and begins to recognise strategic and operational applications

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTPMG403 Manage the delivery of network infrastructure	ICTPMG4152A Manage the delivery of network infrastructure	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPMG403 Manage the delivery of network infrastructure

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- determine scope of network infrastructure requirements
- accurately analyse and document considerations in project specifications and the impact of legislative and environmental conditions on the project plan
- prepare a project brief outlining specifications, timeframes, costing and operating budget
- manage the delivery of network infrastructure to completion.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline Australian Communications and Media Authority (ACMA) licensing requirements
- explain common client telecommunications applications and related equipment
- identify correct computer operation
- describe the workplace and industry environment
- outline industry cabling practices
- explain leasing versus purchase options
- identify legislative and environmental impacts, including options for green information and communications technology (ICT) installations
- outline network and transmission equipment, network topologies, interfaces and interconnect solutions
- describe work health and safety (WHS) procedures
- identify performance parameters and typical faults in equipment and related connection and transmission media, and various test equipment types
- explain the process of project management
- identify telecommunications components and assemblies

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- identify warranty information and contractor work guarantees.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – project management field of work and include access to:

- sites on which projects may be conducted
- relevant databases, legislative requirements and other project related documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPMG502 Develop customer premises equipment installation project plans

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to plan installation of customer premises equipment (CPE).

It applies to individuals who have a high level of specialist technical skills and knowledge in telecommunications and IT networks using internet protocol (IP) systems, and who may supervise others.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – project management

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Assess project requirements	1.1 Discuss and clarify project deliverables with customer using available documentation 1.2 Determine the type of CPE installation project proposed 1.3 Evaluate access, work health and safety (WHS) and environmental

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	issues and include in job specification 1.4 Quantify and source equipment required 1.5 Estimate costs using organisational costing guidelines
2. Prepare detailed system design and configuration	2.1 Capture data necessary to project design brief 2.2 Negotiate system specifications based on project requirements with customer and sales staff 2.3 Translate available data into detailed system design and configuration 2.4 Verify deliverables with customer
3. Detail project and quality plans	3.1 Develop project plan to meet customer's needs with detailed task list, resource needs and timeframes 3.2 Develop contingency plans to meet problems that may arise 3.3 Produce a quality plan, incorporating process flow charts 3.4 Verify plans with customer and appropriate personnel

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1-1.3	• Analyses and interprets a variety of textual information to determine key information, requirements and project deliverables
Writing	1.1, 1.3, 2.2, 2.4, 3.1, 3.3, 3.4	• Develops accurate technical documents and diagrams for a specific audience using clear and detailed language to convey explicit information
Oral Communication	1.1, 2.2, 2.4, 3.4	• Clearly articulates information using relevant language suitable for specific audiences and checks for understanding
Numeracy	1.4, 1.5, 3.1, 3.3	• Uses mathematical calculations to determine costs and timelines • Produces flow charts and other diagrams that capture job specifications
Navigate the world of work	1.3, 1.5	• Monitors adherence to legal and regulatory rights and responsibilities and organisational policies and procedures, with specific reference to workplace

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		safety • Considers own role in terms of its contribution to the broader goals of the work environment
Get the work done	1.2-1.4, 2.1, 2.3, 3.2	• Plans a range of routine tasks, accepting stated goals and aiming to achieve them efficiently • Takes responsibility for the outcomes of routine decisions related directly to own role • Recognises and anticipates an increasing range of familiar problems, their symptom and causes, actively looking for early warning signs and implementing contingency plans • Reflects on the ways in which digital systems and tools are used or could be used to achieve work goals, and begins to recognise strategic and operational applications

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTPMG502 Develop customer premises equipment installation project plans	ICTPMG5027A Develop customer premises equipment installation project plans	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPMG502 Develop customer premises equipment installation project plans

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- assess the equipment and performance requirements for a project on customer premises
- prepare detailed system design and configuration to customer requirements
- develop project and quality plans for the installation.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify and discuss the advantages of cabling types, structures and connectors
- describe the common customer telecommunications applications and related equipment
- explain the key advantages of connections to carrier infrastructure or equipment
- identify and summarise the current legislation relating to installation of telecommunications equipment and connection to carrier services
- explain environmental impacts, including options for green information and communications technology (ICT) installations
- identify and determine cost-effective solutions in installations, including the advantages of leasing and purchasing
- describe the attributes of network and transmission equipment
- explain network topologies, interface and interconnect solutions
- explain work health and safety (WHS) requirements for installations in terms of:
  - electrical safety
  - materials handling
  - physical hazards

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  - confined spaces
  - heights
  - lifting
- calculate the power requirements for the installation plan
- describe typical performance parameters and typical faults that may be encountered in customer equipment and related connection and transmission media
- identify warranty information for equipment supplies and contractor work guarantees.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – project management field of work and include access to:

- a site on which customer premises equipment (CPE) installation can be planned
- relevant documentation, data, technical manuals and other site related documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPMG503 Prepare a project brief

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to prepare a brief for realising a telecommunications project, including costing, vendor and technology choices, scheduling and resourcing.

It applies to individuals who may work under limited supervision and have responsibility to provide guidance or to delegate aspects of tasks to others.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – project management

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan project brief	1.1 Contact client to obtain project details and approved network plan 1.2 Assess current network conditions 1.3 Analyse site survey data and geographical information to initiate studies if required

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	1.4 Assess barriers to plan realisation 1.5 Analyse impact of relevant legislation, codes, regulations and standards on planning processes
2. Develop preliminary project brief	2.1 Develop project specifications, including new technology, according to client requirements 2.2 Draft sketch plan according to enterprise practice for area in question 2.3 Clarify project brief with client as required 2.4 Present final report with option for approval before proceeding with project brief
3. Assess tenders	3.1 Follow process for seeking quotes or issuing tenders for completion of project 3.2 Assess quotes or tenders against project criteria and any proposed variations 3.3 Examine detailed project costing estimates to ensure that budget parameters are attained 3.4 Assess competitive tenders with consideration to meet specified timeframes 3.5 Obtain tender approval from client
4. Monitor contract progress and completion	4.1 Monitor contract activity with progress against specifications 4.2 Establish and maintain regular liaison with project manager and site supervisor 4.3 Discuss contract problems or difficulties with project manager and contractor as required 4.4 Negotiate and implement contract variations 4.5 Prepare project completion advice in conjunction with project manager, installation manager and operational staff 4.6 Undertake quality audit of project and submit any recommendations for improvement according to enterprise procedures 4.7 Prepare final report on project outcomes and achievement 4.8 Present report to client and obtain sign off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

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Skill	Performance Criteria	Description
Reading	1.2, 1.4, 1.5, 3.2-3.4, 4.1, 4.6	• Draws on a broad range of strategies to build and maintain understanding throughout complex texts • Identifies relevant information and extrapolates content to determine project impact, provide recommendations and confirm requirements
Writing	1.1, 2.1-2.4, 3.1, 3.5, 4.2-4.7	• Generates complex written texts, demonstrating control over a broad range of writing styles and purposes • Demonstrates sophisticated writing skills by selecting appropriate conventions and stylistic devices to express precise meaning
Oral Communication	1.1, 2.3, 2.4, 3.5, 4.2-4.6	• Clearly articulates information using relevant language suitable for specific audiences and checks for understanding • Participates in a verbal exchange of ideas and solutions and uses detailed and clear language to clarify and present information according to requirements and audience
Numeracy	1.3, 2.1, 2.2, 3.2-3.4, 4.1, 4.6	• Uses highly developed numeracy skills to interpret complex financial information and perform difficult calculations • Performs mathematical calculations to analyse labour, costs and quantities, and accurately process costs and estimates
Navigate the world of work	1.5, 3.1, 4.6	• Considers legal requirements and organisational policies and procedures relevant to own role
Interact with others	2.4, 4.8	• Selects, implements and seeks to improve protocols governing communications to clients and co-workers in a range of work contexts • Implements strategies for a diverse range of colleagues and clients to build rapport and foster strong relationships
Get the work done	1.2-1.4, 2.1, 3.2, 3.4, 4.1, 4.6	• Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others and taking into account capabilities, efficiencies and effectiveness • Develops plans to manage relatively complex, non-routine tasks • Responds intuitively to problems requiring immediate resolution, drawing on past experiences to focus on the cause of a problem rather than the

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		symptom • Monitors progress of plans and schedules, and reviews and changes them to meet new demands and priorities

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTPMG503 Prepare a project brief	ICTPMG5031A Prepare a project brief	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPMG503 Prepare a project brief

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- develop a project brief for a telecommunications project
- analyse and document considerations in project specifications
- apply legislative and environmental conditions to project brief development
- appropriately assess tenders
- monitor contract work to completion.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe the key aspects of common client telecommunications applications and related equipment
- discuss the telecommunications workplace and industry environment, and how it affects project design
- describe leasing versus purchase options
- identify legislative and environmental impacts, including options for green information and communications technology (ICT) installations
- identify and discuss the key features of network and transmission equipment
- discuss a variety of network topologies, interface and interconnect solutions
- describe the performance parameters and typical faults in equipment and related connection and transmission media, and various test equipment types
- identify the key features of warranty information and contractor work guarantees.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – project management field of work and include access to:

- sites on which projects may be conducted
- relevant databases, legislative requirements and other site and project related documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPMG504 Prepare project specifications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to develop specifications for a telecommunications project, including switching, transmission and radio networks, and the various transmission paths including cable, optical fibre, radio, microwave and satellite.

It applies to individuals who have a high level of specialist technical skills and knowledge in telecommunications and IT networks using internet protocol (IP) systems and who may supervise others.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – project management

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for project estimate	1.1 Analyse project design obtained from appropriate personnel to determine project requirements according to project plan 1.2 Verify project requirements with clients and project team

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	1.3 Ascertain impact of time restraints on estimate 1.4 Analyse impact of relevant legislation, codes, regulations and standards on planning processes 1.5 Establish availability of all appropriate data and documentation to allow for completion of work
2. Estimate resource requirements	2.1 Conduct site inspection to verify design details and project context 2.2 Produce estimate of type, quantity and schedule of resources required for project from project plans 2.3 Prioritise sequence of work appropriate to enterprise needs 2.4 Calculate contractor and employee labour hours required according to project requirements, industrial awards and enterprise policies 2.5 Record estimates of materials, equipment and labour hours according to enterprise guidelines
3. Calculate costing details	3.1 Estimate amount and type of resources required for successful completion of project, including risk management and contingencies 3.2 Calculate costs for resources from current information, following standard costing procedures 3.3 Produce detailed record of all required resources and costing details for project specifications
4. Prepare detailed project plan	4.1 Prepare detailed plan, including specifications for materials, equipment, resources, locations and network routes 4.2 Forward plan and specifications to appropriate personnel for project implementation

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1, 1.4	• Analyses and interprets text in a variety of forms to determine key information and design requirements
Writing	1.2, 1.5, 2.5, 3.2, 3.3, 4.1	• Records and presents information according to enterprise requirements • Develops accurate technical documents and diagrams using language and structure appropriate to the audience and requirements

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Oral Communication	1.2, 1.5, 2.1	• Conveys information using language suitable for specific audiences • Uses listening and questioning skills to clarify understanding
Numeracy	1.3, 2.2-2.5, 3.1-3.3	• Performs mathematical calculations to analyse labour, costs and quantities to accurately process costs and estimates • Applies financial modelling skills to identify, analyse and evaluate budgetary information, time durations and human resource allocations
Navigate the world of work	1.4, 2.4, 2.5	• Considers legal requirements and organisational policies and procedures when planning and implementing a project
Interact with others	2.4, 4.2	• Selects the appropriate form, channel and mode of communication for a specific purpose
Get the work done	1.1, 1.3, 1.5, 2.1-2.4, 3.1	• Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others and taking into account capabilities, efficiencies and effectiveness • Responds intuitively to problems requiring immediate resolution, drawing on past experiences to focus on the cause of a problem rather than the symptom • Uses problem solving skills to analyse and evaluate effective solutions

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTPMG504 Prepare project specifications	ICTPMG5039A Prepare project specifications	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPMG504 Prepare project specifications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- analyse project design to determine specification options
- prepare estimates and calculate the cost of resources for a telecommunications project
- prepare detailed project plan, including specifications for resources and network routes.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain common client telecommunications applications and related equipment
- describe cost effective solutions employed in planning
- describe and apply drafting techniques
- explain the workplace and industry environment
- describe the impact of legislative and environmental impacts, including options for green information and communications technology (ICT) installations
- identify and evaluate the benefits of different network and transmission equipment
- identify and evaluate the benefits of different network topologies and interface and interconnect solutions
- identify the possible implications for a planned design on health and safety
- identify and describe various warranty information and contractor work guarantees.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – project management field of work and include access to:

- sites on which projects may be conducted
- relevant databases, legislative requirements and other site and project related documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPMG610 Develop a project management plan

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge to develop a plan for a telecommunications project, including assessing project requirements and planning for all stages to completion and final documentation.

It applies to individuals who are likely to have responsibility for the provision of installations, maintenance, upgrades and new services.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – project management

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare project management plan	1.1 Evaluate and assess project brief and related documents 1.2 Produce document on project tasks and associated timelines, including installation processes and test requirements 1.3 Assess and produce document on resource requirements to assist allocation of appropriate resources

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	1.4 Produce training plan assessing training needs and associated timelines for efficient project implementation 1.5 Determine and document budgetary requirements 1.6 Discuss roles of all identified parties associated with project to ensure their involvement 1.7 Produce project verification document, including monitoring and control processes, and review processes such as quality audits 1.8 Consult with all relevant parties prior to finalising draft plan and make changes as appropriate
2. Develop and evaluate management plan	2.1 Produce preliminary plan for consultation, including identified factors that may impact on realisation of project and observance of relevant legislation, codes, regulation and standards 2.2 Consult with client and clarify any amendments 2.3 Develop final plan with recommendations
3. Finalise documentation	3.1 Produce and document final plan to include implementation details and training needs 3.2 Present plan to client and obtain sign off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1, 1.3, 1.5, 1.6, 2.1-2.3, 3.1	• Analyses and interprets textual information in a variety of forms to determine key information, requirements and project design
Writing	1.2-1.5, 1.7, 1.8, 2.1-2.3, 3.1	• Uses factual and technically specific language to document a range of requirements • Uses appropriate formats and structures to present information logically for different audiences, and revises documents based on feedback and outcomes
Oral Communication	1.5, 1.6, 1.8, 2.2, 3.2	• Uses listening and questioning techniques to elicit the opinions of others and confirm understanding

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		• Influences discussions using selective language, tone and gestures to clearly articulate information and requirements
Numeracy	1.3, 1.5	• Performs highly developed mathematical calculations to analyse labour, costs and quantities to accurately process quotations and estimates
Navigate the world of work	2.1	• Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work context • Recognises and follows explicit and implicit protocols and meets expectations associated with own role
Interact with others	1.6, 2.2, 3.2	• Collaborates with others, sharing information to build strong work groups and avoids behaviours that are not conducive to a productive environment • Implements strategies for a diverse range of colleagues and clients to build rapport and foster strong relationships
Get the work done	1.1-1.5, 1.7, 2.1, 2.3, 3.1, 3.2	• Reflects on the ways in which digital systems and tools are used or could be used to achieve work goals, and begins to recognise strategic and operational applications • Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context to identify relevant project requirements and priorities • Makes critical decisions quickly and intuitively in complex situations, taking into consideration a range of variables including the outcomes of previous decisions • Recognises and addresses some unfamiliar problems of increasing complexity within own scope, recognising when to seek the advice of others

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTPMG610 Develop a project management plan	ICTPMG6033A Develop a project management plan	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPMG610 Develop a project management plan

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- determine the project attributes and specifications
- prepare a coherent draft project management plan
- consult on and revise a project management plan
- document final project management plan and obtain sign off.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain the key attributes of common telecommunications applications and related equipment
- identify and evaluate the connections to carrier infrastructure or equipment
- identify current legislation relating to the design of installation of telecommunications equipment and connection to carrier services
- evaluate the advantages of leasing and purchase options to assist in delivering cost effective solutions
- identify and evaluate network and transmission equipment
- outline network topologies, and interface and interconnect solutions
- outline work health and safety (WHS) issues that need to be built into a plan, with consideration of:
  - electrical safety
  - materials handling
  - physical hazards
  - confined spaces
  - heights

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    - lifting
- describe and evaluate the power requirements and electrical safety aspects of the installation plan
- describe typical performance parameters and typical faults that may be encountered in client equipment and related connection and transmission media
- identify various test equipment types suitable for tests to be made
- identify warranty information for equipment supplies and contractor work guarantees.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – project management field of work and include access to:

- a telecommunications operations site with relevant technology and infrastructure
- relevant databases, legislative requirements and other project related documentation
- organisational documentation relating to equipment, warranties, leasing, contracts and audits.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPMG611 Prepare a detailed design brief

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to prepare a detailed design brief to realise a building and equipment provisioning project, including costing, vendor and technology choices, scheduling and resourcing.

It applies to individuals with a high level of specialist technical skills and knowledge in optical telecommunications and IT networks using internet protocol (IP) systems for a new installation or upgrade of capacity or technology for an existing network or subsystem for convergence to next generation networks (NGN).

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – project management

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Evaluate design requirements	1.1 Consult relevant legislation, codes, regulations and standards that impact on project 1.2 Determine need for enhancement to new or existing telecommunications network from telecommunications project plan

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	and associated project brief 1.3 Determine specific purpose and type of network growth and enhancement using collated data from other relevant sources 1.4 Consult client regarding enterprise criteria and determine timeframe for design plan 1.5 Establish and organise design resource requirements
2. Evaluate information to prepare design drawings	2.1 Obtain site access through consultation with affected property owners where project impacts on private property 2.2 Collect field data and propose ways to manage physical impediments that may affect building construction work 2.3 Verify existing equipment, equipment layouts and building services to plan for network growth 2.4 Ascertain impact of relevant heritage, environmental and other governmental legislation, and initiate action or organise consultative processes to gain approvals according to enterprise policy 2.5 Prepare design drawing according to enterprise requirements
3. Select design option	3.1 Analyse proposed network needs to determine set of realistic design options 3.2 Evaluate and select preferred design option according to approved enterprise criteria and discuss selected option with client 3.3 Assess system compatibility and make modifications to design
4. Prepare design plan	4.1 Prepare detailed design plan, including relevant geographical and topological information, equipment and material and cost estimates 4.2 Discuss final designs with planners and project management, and obtain approval to proceed 4.3 Produce final detailed design brief with drawings, material requirements, and testing and maintenance plans for operational staff to follow

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1-1.3, 2.4	• Analyses and interprets technical text in a variety of forms to determine key information,

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		requirements and project design
Writing	1.4, 2.1, 2.3-2.5, 3.2, 4.1-4.3	• Develops accurate technical documents and diagrams for a specific audience, using clear and detailed language and diagrams to convey explicit information
Oral Communication	1.4, 2.1-2.4, 3.2, 4.2, 4.3	• Clearly articulates information using relevant language and persuasive techniques suitable for specific audiences
Numeracy	1.4, 1.5, 2.5, 4.1	• Uses mathematical calculations to determine costs, timelines and project specifications • Accurately produces charts and other diagrams that capture site plans
Navigate the world of work	1.1, 2.4, 2.5	• Monitors adherence to all legislative and regulatory rights and responsibilities, and organisational policies and procedures • Considers own role in terms of its contribution to the broader goals of the work environment
Get the work done	1.2, 1.3, 1.5, 2.1-2.3, 3.1-3.3, 4.1	• Reflects on the ways in which digital systems and tools are used or could be used to achieve work goals, and recognises strategic and operational applications • Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context to identify relevant project requirements and priorities • Makes a range of critical and non-critical decisions in relatively complex situations, taking a range of constraints into account • Recognises and addresses some unfamiliar problems of increasing complexity within own scope, recognising when to seek the advice of others

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTPMG611 Prepare a detailed design brief	ICTPMG6034A Prepare a detailed design brief	Updated to meet Standards for Training Packages	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPMG611 Prepare a detailed design brief

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- assess the implications of legislation, regulations and standards on project design
- analyse the network and enterprise needs to determine design options
- consult widely to ensure design represents client requirements
- prepare a design brief for building and equipment design provisioning
- prepare detailed design documentation to enable realisation of design.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain common client telecommunications applications and related equipment
- identify and critique connections to carrier infrastructure or equipment
- describe cost-effective solutions in planning
- identify and explore current legislation relating to installation of telecommunications equipment and connection to carrier services
- review the range of client premises equipment (CPE)
- outline environmental impacts and options for green information and communications technology (ICT) installations
- review network and transmission equipment
- explain network topologies, and interface and interconnection solutions
- outline work health and safety (WHS) issues that are required to be included in the design brief for:
  - electrical safety
  - materials handling
  - physical hazards

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  - confined spaces
  - heights
  - lifting
- review the power requirements and electrical safety of the project
- explain technology of next generation networks (NGN)
- identify test equipment types.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – project management field of work and include access to:

- sites on which projects may be designed
- relevant databases, legislative requirements and other project related documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPMG801 Manage a telecommunications workplace

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to fulfil workplace management responsibilities at a managerial and supervisory level in a telecommunications business environment.

It applies to individuals who combine technical skills with management skills to manage technical staff in an advanced technological environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – project management

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Support human resources activities	1.1 Assist and advise on recruitment action and induction of new staff 1.2 Monitor staff training needs and implement technical training activities for staff 1.3 Provide information and advice to relevant personnel 1.4 Review and advise on work health and safety (WHS) and security in workplace

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2. Manage conflict in workplace	2.1 Assess conflict situation 2.2 Determine ways to resolve conflict with conflicting parties 2.3 Apply decision making procedures to business model for conflict resolution
3. Apply quality management systems and processes in workplace	3.1 Document essential requirements of product using quality management approach 3.2 Assess relationship between client and owner to identify process to achieve agreement on measurable quality features 3.3 Analyse quality investigation for improvement by involving individuals, groups and managers
4. Monitor work practices to ensure business objectives will be met	4.1 Develop strategies, using management characteristics to meet business objectives 4.2 Analyse individual management objectives applicable to workplace 4.3 Produce business model representing activities of sound management plan for telecommunications workplace
5. Determine human factors when managing people and groups	5.1 Establish consultation processes between management and staff to resolve grievances 5.2 Analyse interpersonal skills required of managers and team leaders using identified communications channels 5.3 Conduct performance reviews and take appropriate action
6. Perform work using self-organisation principles	6.1 Evaluate methods of improving own productivity and perform a self-appraisal 6.2 Evaluate effectiveness of information processing methods used in workplace, applying time management techniques 6.3 Produce report to communicate information efficiently and effectively in workplace
7. Apply effective communication techniques to business meetings	7.1 Research levels, directions and effectiveness of channels used when communicating in business 7.2 Develop plan for managing business meetings in workplace

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

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Skill	Performance Criteria	Description
Learning	6.1	• Uses investigative techniques to expand on existing knowledge and experience
Reading	1.4, 3.1, 4.2, 7.1	• Analyses and interprets textual information from a variety of sources to determine key information and requirements
Writing	1.1-1.4, 3.3, 4.1-4.3, 5.1, 5.3, 6.3, 7.2	• Develops material using an appropriate format containing clear, instructional and informative language to communicate specific information
Oral Communication	1.1, 1.3, 1.4, 3.3, 5.3	• Facilitates discussions by using listening and questioning techniques and appropriate tone to confirm understanding and obtain information • Clearly articulates information using tone, pace and language appropriate for the audience
Navigate the world of work	1.4	• Considers own role in terms of its contribution to the broader goals of the work environment • Monitors and reviews the organisation's policies, procedures and adherence to legislative requirements to implement and manage change
Interact with others	3.3, 5.2, 6.1	• Invests considerable time and energy in building and maintaining effective working relationships within and beyond the immediate work context, recognising and intuitively responding to the subtle and complex mix of factors at play in every interaction • Sets time aside for self-reflection, recognising personal strength and limitations, and exploring beliefs and assumptions about own behaviour and that of others • Recognises potential for conflict in working with others and seeks to develop organisational processes to deal with conflict
Get the work done	1.2, 2.1-2.3, 3.2, 4.1-4.3, 5.1, 5.3, 6.2	• Recognises the critical importance of clarifying, focusing and aligning goals and expectations, and uses the process to build ownership of and broad commitment to

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		achieving outcomes • Takes responsibility for high impact decisions in complex situations involving many variables and constraints • Uses formal analytical and lateral thinking techniques for identifying issues, and generating and evaluating possible solutions • Articulates and challenges the values, beliefs and assumptions that shape thinking and routinely reframes and redefines problems to get new perspectives and generate new ideas • Uses digital technologies to manage business operations and actively investigates new technologies for strategic and operational purposes

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTPMG801 Manage a telecommunications workplace	ICTPMG8142A Manage a telecommunications workplace	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPMG801 Manage a telecommunications workplace

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- determine the human factors that need to be analysed when managing people and groups
- conduct business meetings, applying effective communication techniques
- determine essential requirements of a product, applying quality management principles
- monitor and implement training for staff
- resolve problems and conflicts professionally in a business environment
- support a human resources management program.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- evaluate equity and diversity legislation and underlying principles
- critique a range of organisational procedures and policies relating to human resources management
- assess work health and safety (WHS) requirements and contrast with legislation and regulations
- outline behaviour theories relevant to managing staff in a workplace
- summarise the effect of public sector legislation, codes of practice and other formal agreements that directly impact on business operations
- establish the technical aspects of telecommunications networks that impact directly on human resources management
- formulate strategies to manage the workplace and industry environment.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – project management field of work and include access to:

- a telecommunications workplace
- relevant enterprise documentation, including human resources and quality management policies.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPMG802 Manage a telecommunications project

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to produce a plan, develop risk management strategies, prepare budgets, plan for contingencies, develop procedures for commissioning the project and archive project documentation.

It applies to individuals who implement specified projects for an installation or upgrade of the telecommunications network.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – project management

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to manage project	1.1 Develop project proposal, including specific project management processes from specifications and/or contracts 1.2 Document role of major stakeholders and implications for project 1.3 Develop risk management strategy and present to stakeholders for agreement

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	1.4 Check for technical compliance of project with relevant standards 1.5 Select project management computer software 1.6 Conduct skills audit of personnel and identify additional training requirements
2. Apply project management processes	2.1 Determine participants' responsibilities using critical path method (CPM) to draw network diagram 2.2 Sequence and coordinate activities required for specific project 2.3 Determine critical path to optimise timing of project deliverables 2.4 Assess viability of project estimates by preparing budget 2.5 Perform risk analysis to determine factors that may hinder project deliverables 2.6 Assess progress of project with contingencies to manage risks 2.7 Determine any updates and recommendations in agreement with client 2.8 Determine if contract variations are required and make changes
3. Complete work and document activities	3.1 Make provision for commissioning and project completion 3.2 Produce final documentation with recommendations and present to client 3.3 Document and archive project documentation 3.4 Obtain sign off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1,1.4-1.6, 2.1, 2.5, 2.6, 2.8, 3.2	• Analyses, interprets and compares a variety of textual material to determine key information and requirements
Writing	1.1, 1.3, 1.6, 2.2, 2.5, 2.7, 2.8, 3.2, 3.3, 3.4	• Produces technical documents using a cohesive format to clearly and logically convey a range of information and data
Oral Communication	1.3, 2.7, 3.2	• Facilitates discussions using listening and questioning techniques to confirm understanding and obtain required information

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		• Clearly articulates information using relevant language and techniques to obtain a mutually acceptable result
Numeracy	2.2, 2.4	• Applies knowledge of mathematical formulas to estimate monetary requirements against a project plan and calculate required timelines against tasks
Navigate the world of work	1.4	• Monitors adherence to relevant standards, policies and procedures and considers own role in terms of its contribution to the broader goals of the work environment
Interact with others	1.3, 3.2	• Tailors every communication to achieve its purpose, demonstrating a sophisticated understanding of the needs, interests, issues and priorities of each audience
Get the work done	1.1, 1.3, 1.5, 1.6, 2.1-2.7, 3.1, 3.3, 3.4	• Recognises and anticipates an increasing range of familiar problems, their symptoms and causes, actively looking for early warning signs and implementing contingency plans • Takes responsibility for high impact decisions in complex situations involving many variables and constraints • Operates from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation, identifying and addressing issues and reallocating resources • Defines benefits, costs, risks and feasibility from a broad range of perspectives, and thinks laterally to redesign aspects to address potential issues • Understands the purposes, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine tasks, adapting some functions to improve personal efficiency

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTPMG802 Manage a telecommunications	ICTPMG8143B Manage a telecommunications	Updated to meet Standards for Training Packages	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
project	project	Minor change to Performance Criteria	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPMG802 Manage a telecommunications project

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- prepare and apply a project management process to a telecommunications project using project management software
- develop a comprehensive plan to manage a telecommunications project with a risk management strategy, budget and contingencies
- complete work and project documentation accurately.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- critically analyse organisational project management policies and procedures
- assess safety management processes and procedures in a workplace environment including:
  - personal protective equipment conforming to industry and work health and safety (WHS) standards
  - precautions required to minimise, control or eliminate hazards that may exist during work activities
- evaluate the impact of relevant legislation, codes, regulations and standards on the management of a communications project
- assess the workplace and industry environment and its impact on project development to implementation, including:
  - commissioning procedures

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  - industrial issues
  - roles and responsibilities
  - skills audit
- evaluate the telecommunication systems and their impact on a project
- define the role that site engineering has on the development of a project management plan
- evaluate project management processes and the software packages available to assist management.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – project management field of work and include access to:

- a telecommunications site
- computers and relevant computer software
- relevant legislation, codes, regulations and standards.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPMG803 Undertake a telecommunications project

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to research and plan a telecommunications project covering an extensive range of complexities and technologies.

It applies to telecommunications technical staff who undertake complex projects requiring high levels of planning and management, and combine technical and work health and safety (WHS) skills in planning and management work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – project management

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section*
1. Prepare for telecommunications project	1.1 Obtain project plan from authorised personnel to identify nature of project and project specifications 1.2 Verify location of proposed project work according to appropriate plans 1.3 Critically analyse project specifications and research emerging telecommunications technology that may benefit project

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	1.4 Consult authorised personnel to finalise project specifications and obtain agreement 1.5 Source project resources required, including those for safe work practice 1.6 Prepare contingency plans, including any risks that could impact on project 1.7 Develop project implementation plan according to standards with minimal workplace disruption, and obtain agreement from authorised personnel 1.8 Notify authorised personnel of possible network outage where required
2. Carry out telecommunications project work	2.1 Follow work health and safety (WHS) and environmental requirements according to plan and manufacturer's specifications 2.2 Inform appropriate personnel of existing and potential hazards on worksite 2.3 Perform project work phases according to agreed plan and accepted work practice 2.4 Implement project planning principles, including risks that may impact on project 2.5 Monitor project to completion to ensure that it is progressing according to plan and risks are minimised 2.6 Report on implementation phases
3. Clean up worksite and complete documentation	3.1 Remove and dispose of project waste and debris from worksite according to environmental requirements 3.2 Restore changes made to work area to client's satisfaction 3.3 Complete all project documents and present to client 3.4 Declare asset ready for commissioning and integration if required 3.5 Notify client and obtain sign off

Foundation Skills

This section describes the Foundation Skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description

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Reading	1.1-1.3, 1.7, 2.1	• Organises, evaluates and critiques ideas and information from a wide range of complex texts • Draws on a broad range of strategies to build and maintain understanding throughout complex texts
Writing	1.4, 1.6-1.8, 2.2, 2.6, 3.3-3.5	• Demonstrates sophisticated writing skills by selecting appropriate conventions and stylistic devices to express precise meaning • Prepares documentation expressing ideas, explores complex issues and is constructed logically, succinctly and accurately
Oral Communication	1.1, 1.2, 1.4, 1.7, 1.8, 2.2, 2.6, 3.2, 3.4, 3.5	• Determines and confirms client requirements using collaborative and inclusive techniques including active listening and questioning • Reads verbal and non-verbal signals to convey and clarify information and to confirm understanding
Numeracy	1.5-1.7	• Analyses and synthesises highly embedded mathematical information in a broad range of tasks and texts
Navigate the world of work	1.7, 2.1, 3.1	• Develops and implements strategies that ensure organisational policies, procedures and regulatory requirements are being met
Interact with others	1.1, 1.2, 1.4, 1.8, 2.2, 2.3, 2.5, 3.2-3.5	• Develops and implements communications strategies with internal and external persons to build rapport • Influences and fosters a collaborative culture, facilitating a sense of commitment and workplace cohesion • Shares knowledge, information and experience openly as an integral part of the working relationship • Understands diversity and seeks to integrate diversity into the work context for managing change, making decisions and achieving shared outcomes
Get the work done	1.1, 1.2, 1.5-1.7, 2.1-2.5, 3.1, 3.2, 3.4	• Plans strategic priorities and outcomes within a flexible, efficient and effective context in a diverse environment exposed to competing demands • Gathers and analyses data and seeks feedback to improve plans and processes • Makes high impact decisions in a complex and diverse environment, using input from a range of sources • Addresses complex problems involving multiple variables, using formal analytical and lateral thinking techniques, experience and knowledge to focus on the root cause • Explores and incubates new and innovative ideas through unconstrained analysis and critical thinking

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		• Uses digital technologies to manage business operations

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTPMG803 Undertake a telecommunications project	ICTPMG7145B Undertake a telecommunications project	Updated to meet Standards for Training Packages New code to reflect change in AQF level	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPMG803 Undertake a telecommunications project

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- research and critically analyse the deliverables for a telecommunications project
- consult with relevant personnel to elicit and confirm project outcomes
- prepare plans for implementation, address contingencies and manage risk
- implement and monitor telecommunications project work and report progress to relevant personnel
- ensure project is completed in accordance with environmental and client requirements
- document the project outcomes and obtain client sign off.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- evaluate organisational project management policies and procedures in relation to project development
- critically analyse the operation of transmitters and receivers
- explore the management of safety on projects and setting project policies and procedures for:
  - personal protective equipment conforming to industry and work health and safety (WHS) standards
  - precautions required to minimise, control or eliminate hazards that may exist during work activities
- evaluate the impact of relevant legislation, codes, regulations and standards on the project

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- explore the telecommunications system principles and operational procedures that contribute to project development, including:
  - personnel involved
  - project specifications
  - project resources
- evaluate the workplace and industry environment and its impact on development of the project.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – project management field of work and include access to:

- a telecommunications operations site on which a project can be carried out
- computers and relevant computer software
- relevant legislation, codes, regulations and standards.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPMG804 Evaluate and use telecommunications management networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to analyse, evaluate and monitor business performance using telecommunications management network (TMN) systems in the management of open systems in communications networks.

It applies to individuals who have a very high level of technical management skills and knowledge in telecommunications networks and systems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – project management

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to evaluate and use telecommunications management network	1.1 Research and evaluate network management architectures in common carrier and extended models 1.2 Evaluate features and functionality of Standards Committee International Telecommunications Union (ITU-T) TMN architecture and network models 1.3 Research and evaluate techniques for collecting management

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	information from network nodes using interrupts and polling 1.4 Analyse configuration management problems and produce assessment report on solutions by integrated network management systems
2. Analyse fault management and accountability procedures	2.1 Evaluate effectiveness of fault management processes from beginning to resolution, including automation of fault management 2.2 Analyse reasons for alarm correlation with process analysis and apply fault identification to network problems
3. Plan for reliability and survivability	3.1 Research and produce a report on quality of service (QoS) in a telecommunications context, including relevant international standards and range and type of possible monitoring parameters for QoS 3.2 Analyse reasons for service levels in telecommunications context 3.3 Perform linear and exponential trend analysis on real or simulated data for single monitoring parameter 3.4 Research and assess reliability and survivability in telecommunications context with reference to disaster and security management policies and procedures 3.5 Develop disaster recovery plan for telecommunications network
4. Research and report network management techniques	4.1 Research how accounting records are generated and used for both voice and data networks 4.2 Analyse process of generating bills from accounting records, configuration and client information 4.3 Research and report on network management techniques and standards used for internet 4.4 Research and report on standards used in simple network management protocol (SNMP) network management model and global system for mobiles (GSM) network 4.5 Analyse network management functions over CNET network simulation or similar data network and produce report on findings

Foundation Skills

This section describes the Foundation Skills incorporated in the performance criteria that are required for competent performance.

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Skill	Performance Criteria	Description
Reading	1.1-1.3, 3.1, 3.4, 4.1, 4.3-4.5	• Analyses and interprets text to determine key information and applications • Interprets textual and numerical information in a variety of forms, and applies the knowledge gained to evaluate methodologies
Writing	1.2-1.4, 2.1, 2.2, 3.1-3.5, 4.2-4.5	• Produces accurate technical documents for a specific audience using clear and detailed language and visuals to convey explicit information • Prepares information that incorporates evaluation of information and specialised and cohesive language in a format and style appropriate for a specific audience
Oral Communication	3.1, 4.3, 4.4	• Clearly articulates information using relevant language and persuasive techniques suitable for specific audiences
Numeracy	3.3, 4.1, 4.2	• Applies mathematical techniques to analyse and report on technical requirements and implications
Get the work done	1.1-1.4, 2.1, 2.2, 3.1-3.5, 4.1-4.5	• Gathers and analyses data and seeks feedback to improve plans and processes • Makes high impact decisions in a complex and diverse environment, using input from a range of sources • Identifies key factors that impact on decisions and their outcomes, drawing on experience, competing priorities and decision making strategies where appropriate • Explores and incubates new and innovative ideas through unconstrained analysis and critical thinking • Uses digital technologies to manage business operations and actively investigates new technologies for strategic and operational purposes

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTPMG804 Evaluate and use telecommunications management networks	ICTPMG8149B Evaluate and use telecommunications management networks	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPMG804 Evaluate and use telecommunications management networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- research and evaluate the architectural features and functions of network management systems
- research and report on the following:
  - the major features, configuration and functions of management systems
  - fault management and accountability procedures
  - the major features and functions of quality of service (QoS) agreements
  - network management techniques
- analyse the major features of planning for reliability and survivability.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- evaluate administrative network management systems
- review business models and business processes used in telecommunications management networks
- investigate enterprise solutions for a given situation
- evaluate operations network management systems
- determine organisational policies and procedures that relate to management systems
- evaluate the impact of the workplace and industry environment on the use of a telecommunications management system.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – project management field of work and include access to:

- a telecommunications operations site with a network management system
- networked computers with relevant software.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPRG301 Apply introductory programming techniques

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to create simple applications or games.

It applies to individuals with responsibility for creating applications or games and includes creating code, using programming standards, testing, and debugging.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Apply language syntax and layout	1.1 Apply basic language syntax rules 1.2 Use language data types, operators, and expressions to create a clear and concise code 1.3 Apply the variables and variable scope 1.4 Use the library functions in a program 1.5 Use commenting to create a clear meaning to the code
2. Apply control	2.1 Apply the language syntax for sequence, selection and iteration

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ELEMENT	PERFORMANCE CRITERIA
structures	constructs 2.2 Use logical operators to create expressions for use in selection and iteration constructs
3. Code using standard algorithms	3.1 Develop algorithms that use the sequence, selection and iteration constructs 3.2 Create and use arrays 3.3 Code the standard sequential access algorithms, for reading and writing text files, including end-of-file detection loops 3.4 Apply string manipulation
4. Test the code	4.1 Use debugging techniques to trace code execution and examine the variable contents to detect, and correct, errors 4.2 Create and conduct simple tests, to confirm that the code meets the design specification 4.3 Document the tests performed and results achieved
5. Create an application or game	5.1 Design an algorithm in response to basic program specifications 5.2 Develop the application or game to meet the program specification 5.3 Test and confirm that the application, or game, meets the initial specifications

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Writing	1.2, 1.5, 4.3	• Prepares workplace documentation, according to organisational formats and protocols • Creates program code using the correct syntax
Numeracy	2.2, 3.1, 5.1	• Uses mathematical formulae to ensure that the program specifications are met
Get the work done	1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 3.1, 3.2, 3.3,	• Takes responsibility for planning, sequencing and prioritising tasks and own workload, for efficiency and effective outcomes

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	3.4, 4.1, 4.2, 5.2, 5.3	• Uses problem-solving techniques to analyse the required outcomes, in order to determine the correct program code • Uses a formal decision-making process, identifying and evaluating several choices against a limited set of criteria, when selecting syntax • Evaluates the effectiveness of decisions in terms of how well they meet stated design specifications • Uses the features of digital tools to complete complex tasks

Unit Mapping Information

Code and title **current version**	**Code and title** **previous version**	**Comments**	**Equivalence status**
ICTPRG301 Apply introductory programming techniques	ICAPRG301A Apply introductory programming techniques	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG301 Apply introductory programming techniques

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- apply programming language syntax, sequence, selection and iteration control structures to the development of an application, or game
- produce an application, or game, that is designed and built from the program specifications
- confirm that the created application, or game, meets the original program specifications, and obtain user sign-off for the completed program.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify and describe common games programming languages, their syntax, and command structure
- describe the development of small-sized applications or games.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the programming and software development industry, and include access to:

- the requirement documents
- the site documents
- software development tools currently used in industry, such as a compiler
- an independent development environment (IDE).

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Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPRG430 Apply introductory object-oriented language skills

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Application

This unit describes the performance outcomes, skills and knowledge required to undertake introductory programming tasks using an object-oriented programming language including tool usage, documentation, debugging, and testing techniques.

It applies to individuals who are programmers in a variety of fields and who are required to produce simple programs in object-oriented languages.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Determine application design	1.1 Review and clarify user requirements with user 1.2 Plan and determine application design specifications to satisfy user requirements
2. Implement the application design	2.1 Develop application according to application design and organisational code conventions 2.2 Document application according to organisational documentation conventions

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3. Test the application	3.1 Develop tests to determine that application logic and syntax satisfies user requirements and application specifications, and modify application to meet user requirements and application specifications 3.2 Document tests according to organisational documentation conventions
4. Hand over the application to the user	4.1 Review application against user requirements to ensure user requirements are satisfied 4.2 Present application to user and obtain user acceptance

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	**Description**
Reading	• Evaluates, and integrates, information and ideas to construct meaning and selects, and applies reading strategies in relation to design specifications, coding standards, and coding- language documentation
Writing	• Communicates relationships between ideas and information, in a style appropriate to the audience and purpose, and selects the vocabulary, grammatical structures and conventions appropriate to the text, in relation to coding, recording outcomes, and documenting activities
Numeracy	• Selects from, and flexibly applies, mathematical and problem-solving strategies and techniques, in a programming context • Uses formal written mathematical language and representation, in the context of programming
Navigate the world of work	• Recognises and follows, explicit and implicit standard and meets expectations associated with own role when developing code that is compliant with standards and guidelines
Get the work done	• Uses a formal decision-making process, identifying and evaluating several choices against a limited set of criteria, when selecting language data types, operators and expressions • Evaluates the effectiveness of decisions, in terms of how well they meet the stated design specifications • Uses analytical processes to decide on a course of action when debugging • Utilises features within applications in order to develop software programs • Recognises, and uses language and symbols, when applying the coding syntax

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	• Actively identifies systems, devices and applications with the potential to meet current and future needs regarding programming

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTPRG430 Apply introductory object-oriented language skills	ICTPRG406 Apply introductory object-oriented language skills	Edits to elements 1–4, foundation skills, and assessment requirements to clarify intent.	Equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG430 Apply introductory object-oriented language skills

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements and performance criteria of this unit; including evidence of the ability to:

- Select and use three language data types, three operators and three expressions
- Use correct language syntax for one sequence, one selection and two iteration constructs
- Use a modular approach to implement the logic for one object operation
- Implement a class that uses arrays of primitive data types twice.
- Read from and write to one text file
- Implement two classes that each contain four instance variables
- Implement one class that contains two options for object construction
- Implement one class that uses user-defined object aggregation
- Implement polymorphism once for code extensibility
- Use one debugging tool
- Apply code and documentation conventions that specify at least 3 aspects, according to organisational requirements
- Perform and document two unit test cases
-

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

- Processes and techniques related to object-oriented programming, including the concepts and language
- Syntax language rules, data types structures
- Primitive instance variables
- Class variables
- Small-size application development processes
- Polymorphism and inheritance

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- Debugging and testing approaches and techniques
- Constructors
- Object aggregation
- Sequence, selection and iteration constructs
- Organisational documentation
-

Assessment Conditions

Skills must be demonstrated in a workplace or simulated environment where conditions are typical of those in an ICT working environment or workplace. This includes:

- Integrated development environment
- Applications relevant to software development
- Organisational code and documentation conventions
- User requirements
- Individual user to consult

Assessors of this unit must satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPRG531 Prepare for application development using current methods

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Application

This unit describes the skills and knowledge required to carry out application development using current methods.

It applies to ICT workers and individuals who are programmers in a variety of job roles.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine application development requirements	1.1 Review detailed organisational requirements and application requirements to select tool sets 1.2 Develop prioritised plan using series of recursive and iterative stages of build to satisfy organisational and application requirements 1.3 Identify and formally allocate responsibilities for features to developers to implement prioritised plan 1.4 Plan and document endorsement of reviews, administration

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	schedules, and development milestones
2. Determine the work metrics	2.1 Set development goals in consultation with user 2.2 Seek and secure agreement on, and adherence to, single common notation with user 2.3 Determine tools, features and techniques for development environment 2.4 Plan, develop, document and facilitate version and change-control methods 2.5 Plan for and facilitate training and exposure for user via chosen development method
3. Implement the administration method	3.1 Determine and reach agreement on specifications with user 3.2 Confirm dates for established milestones with user and secure written agreement 3.3 Administer and maintain time-recording and management methodologies

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	**Description**
Reading	• Interprets, and critically analyses, complex texts and applies the appropriate strategies to construct meaning from complex technical documents
Writing	• Displays a knowledge of structure and layout, employing a broad vocabulary, grammatical structure and the conventions appropriate to text, when developing documentation
Oral communication	• Demonstrates flexibility in spoken texts by choosing the appropriate structures and strategies • Applies appropriate strategies to extract the main ideas from oral texts when liaising with stakeholders, facilitating training and informing parties on the administration method
Interact with others	• Recognises and applies, the protocols governing what to communicate, with whom, and how, when liaising with stakeholders, facilitating training and informing parties on administration methods • Recognises the importance of joint ownership of the process, and outcomes, and tries to identify common ground, shared goals, and agreement on the best course of action

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Get the work done	• Sequences and schedules complex activities, monitors implementation, and manages relevant communication, when implementing a prioritised plan and database, scheduling timelines, allocating responsibilities, and establishing goals and methods • Makes a range of critical and non-critical decisions in relatively complex situations, taking a range of constraints into account • Uses analytical processes to decide on a course of action, establishing the criteria for deciding between options • Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world, and uses these to troubleshoot and understand, the uses and potential of new technology

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTPRG531 Prepare for application development using current methods	ICTPRG514 Prepare for software development using rapid application development	Unit code and title changed. Edits to application, elements 1–3, and assessment requirements to modify intent and scope of unit to remove specificity relating to rapid application development methodology.	Not equivalent

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG531 Prepare for application development using current methods

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements and performance criteria of this unit; including evidence of the ability to:

- Prepare once for application development using current methods, including the ability to:
  - determine the organisational requirements including selecting and using a tool set, implementing and incorporating a physical database, and identifying the schedule of modules
  - determine the work metrics including development goals, features and techniques most appropriate to the development environment
  - facilitate, plan, develop and document the version and change-control methods
  - facilitate training and exposure for users via chosen method
  - determine and secure agreement as to specifications and milestones
  - inform the production-system parties and secure written acknowledgment
  - administer and maintain time-recording and management
  -

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

- Commonly used and industry-accepted prototyping tools
- Programming languages commonly used for application development
- Quality assurance practices required for software development
- Iterative software development methodologies
- Training development and facilitation approaches
-

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Assessment Conditions

Skills must be demonstrated in a workplace or simulated environment where conditions are typical of those in an ICT working environment or ICT workplace. This includes:

- Integrated development environment
- Physical database
- Detailed user requirements
- Prototyping software
- Individuals users including to enable training facilitation
- Application requirements document, including the model and scope

Assessors of this unit must satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPRG532 Apply advanced object-oriented language skills

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Application

This unit describes the skills and knowledge required to undertake advanced programming tasks using object-oriented programming languages in the development of large-sized applications.

It applies to individuals who are programmers producing complex object-oriented programming in the development of large-sized applications.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan application implementation	1.1 Plan implementation of application according to system specifications 1.2 Present implementation plan to user and negotiate to reach agreement
2. Implement the application design	2.1 Prepare version control system according to implementation plan 2.2 Develop application according to implementation plan, system

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	specifications and organisational code conventions 2.3 Document application according to organisational documentation conventions
3. Test the application	3.1 Develop tests to determine application logic and syntax satisfies system specifications 3.2 Perform testing on application to determine application satisfies system specifications and address variances 3.3 Document tests according to organisational documentation conventions
4. Hand over the application to the user	4.1 Review application against system specifications and address variances 4.2 Present the application to the user and obtain user acceptance

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	**Description**
Reading	• Interprets and critically analyses complex texts and applies appropriate strategies to construct meaning from complex standards and guidelines documents
Writing	• Displays knowledge of structure and layout, employing broad vocabulary, grammatical structure and conventions appropriate to text when creating program documentation and documenting tests and test results • Communicates complex relationships between ideas and information, matching the style of writing to the purpose and audience, and displays a knowledge of structure and layout, employing a broad vocabulary, grammatical structure, and the conventions appropriate to text
Numeracy	• Selects from, and applies, an expanding range of mathematical and problem-solving strategies
Get the work done	• Accepts responsibility for planning and sequencing complex tasks and workload, taking into account capabilities, efficiencies and effectiveness • Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information, and identifying and evaluating options against agreed criteria • Uses analytical processes to decide on a course of action, establishing

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	criteria for deciding between options • Understands key principles and concepts underpinning the design and operation of digital systems and tools

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTPRG532 Apply advanced object-oriented language skills	ICTPRG501 Apply advanced object-oriented language skills	Edits to elements 1–4 and assessment requirements to clarify intent.	Equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRG532 Apply advanced object-oriented language skills

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements and performance criteria of this unit; including evidence of the ability to:

- Plan, implement, test, and handover one application, using two object-oriented languages, including the ability to:
  - implement nested classes
  - design and implement dynamic data structures including a doubly linked list and a binary tree
  - design and implement a data structure utilising a hash function
  - compare three sorting algorithms
  - select and implement a sorting algorithm and a comparator
  - compare three search algorithms
  - select and implement a search algorithm
  - implement two inter-process communication mechanisms
  - select and implement a search algorithm
  - implement a graphical user interface with:
    - drag and drop
    - help files
    - 2D graphics
  - utilise an architectural framework and third party library
  - implement a client-server application including data transfers
  - create tests and debug an application
  - document code
  - utilise a version control system for code and documentation management
  -

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Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

- Architectural framework for web-enabled application development
- Inter-process communication mechanisms
- Development methodologies for large-size applications
- Testing techniques as applied to distributed application development
- Design patterns
- Graphical user interface design principles
- Client-server model
- Dynamic data structures and associated space and time complexities
- Hash functions and data structures using hash functions and associated space and time complexities
- Sorting algorithms and associated time complexities
- Search algorithms and associated time complexities
- Programming language features and syntax
-

Assessment Conditions

Skills must be demonstrated in a workplace or simulated environment where conditions are typical of those in an ICT working environment or ICT workplace. This includes:

- Database management system (DBMS)
- Networked computers
- Integrated development environment
- Debugging tools
- System specifications including problem descriptions
- Organisational code conventions
- Organisational documentation conventions
- Individual user
- Access to third party libraries and related documentation
- Access to architectural frameworks and related documentation
- Access to version control system

Assessors of this unit must satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTPRO501 Develop training, marketing and sales resources for telecommunications products

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to develop documentation and training material, providing product-specific technical information resources for use by technical, sales and training personnel within an organisation.

It applies to individuals with responsibilities for professional development on product-specific material who may be technical or semi-technical staff involved in sales and marketing of new and emerging technologies in next generation networks (NGN). The training resources, including web resources, are likely to be for new products using emerging technologies, supplied by the service provider.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – product skills and advice

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*

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1. Prepare information and formats for training, marketing and sales resources	1.1 Identify target audience, product type, resources type, format and purpose to be developed 1.2 Locate enterprise resources relating to telecommunications product information and technical data suitable for training, such as marketing and sales materials, manufacturer's documentation and sites for suitable resources 1.3 Research range of formats for resources and materials to meet requirements of identified audience 1.4 Determine specifications for resource material and confirm with client for approval
2. Develop resources and obtain approvals	2.1 Produce draft training, marketing and sales resources in consultation with relevant user groups and training resource designers 2.2 Check that resources are for latest product available for sales and marketing 2.3 Produce clear and accurate training manuals and user guides 2.4 Confirm accuracy of information with appropriate technical staff prior to publication or production, and obtain approvals
3. Monitor distribution and maintenance of resources	3.1 Develop schedule for distribution of resources consistent with product or facility release and list of users 3.2 Seek feedback on content and presentation from users and make improvements as required

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1-1.4, 2.2, 2.4, 3.2	• Critically organises, evaluates and applies content from a range of structurally complex texts including client briefs, product and technical information and interpretation of feedback from users
Writing	1.3, 1.4, 2.1,	• Generates complex written texts appropriate for a specific audience, demonstrating control over a

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	2.3, 3.1, 3.2	broad range of writing styles and purposes
Oral Communication	1.1, 1.4, 2.1, 2.4, 3.2	• Establishes and maintains complex and effective rapport with clients and colleagues, with a depth of understanding that includes multiple and unstated meanings
Navigate the world of work	1.4, 2.4	• Recognises and follows explicit and implicit protocols in relation to liaison with clients and staff • Ensures knowledge of legislative requirements and products is kept up to date to provide accurate information
Get the work done	1.1-1.4, 2.1, 2.2, 3.2	• Uses a mix of intuitive and formal processes to identify key information and issues, evaluate alternative strategies, anticipate consequences and consider implementation issues and contingencies in relation to resource production • Makes a range of critical and non-critical decisions in relatively complex situations, taking a range of constraints into account when determining content and format requirements • Adopts content and presentation proposals suggested by others and finds ways to make them work in practice • Reflects on the ways in which digital systems and tools are used or could be used to develop resources, and begins to recognise strategic as well as operational applications

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTPRO501 Develop training, marketing and sales resources for telecommunications products	ICTPRO5026A Develop training, marketing and sales resources for telecommunications products	Updated to meet Standards for Training Packages	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTPRO501 Develop training, marketing and sales resources for telecommunications products

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- interpret and use equipment and system manuals, specifications, relevant enterprise policy and documentation
- develop product training, marketing and sales resources for different knowledge and skill levels and applications
- evaluate web based training, marketing and sales resources
- implement improvements based on feedback
- provide a range of resource types, including print based and web based.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- evaluate common client telecommunications applications and related equipment
- investigate work health and safety (WHS) and regulatory requirements relevant to training and marketing
- investigate and compare specific product knowledge and reference documents relevant to products for inclusion in appropriate resources
- define relevant technical terminology
- outline the steps in the process of developing product resources.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – product skills and advice field of work and include access to:

- a workplace where technical information may be developed and distributed to technical, sales and training staff
- relevant product technical information, databases, legislative requirements and other site and project related documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTRFN201 Install a satellite antenna

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to assemble, connect, align and test equipment according to plans, specifications and site specific requirements.

It applies to individuals who work on single and multiple dwellings, commercial buildings, telecommunications structures and at ground level to enable signals from geostationary communications satellites. Installations might be new or existing, stand alone or be a part of a site with multiple antennas.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Unit Sector

Telecommunications – radio frequency networks

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for work on satellite antenna	1.1 Prepare for installation, applying all relevant legislation, codes, regulations and standards, and identify any safety issues 1.2 Organise resources to be available on site

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	1.3 Contact client to arrange access to site and notify about possible outage 1.4 Organise tools and equipment and ensure they are in safe working order and adjusted to manufacturer's specifications 1.5 Obtain details of satellite to be acquired and precise details of satellite antenna location 1.6 Determine azimuth and elevation for satellite receiving antenna 1.7 Determine polarisation angle of satellite receiving antenna feedhorn 1.8 Determine suitable position to mount antenna with agreement from client
2. Assemble and mount satellite antenna and cables	2.1 Assemble satellite antenna on site according to plans, specifications and enterprise guidelines using safe industry practices 2.2 Connect coaxial cable to antenna and install lightning protection devices 2.3 Mount satellite antenna on to installed mounting arrangements and set initial antenna azimuth, elevation and polarisation
3. Test and align antenna system	3.1 Connect installed antenna system to satellite receiver or test equipment and make final adjustments to azimuth, elevation and polarisation to optimise signal level and quality 3.2 Conduct performance tests according to manufacturer's specifications and enterprise guidelines 3.3 Interpret test results, compare with manufacturer's design specifications and make adjustments
4. Complete administrative duties	4.1 Record test results and complete appropriate records 4.2 Secure and clean up site to original condition in environmentally safe manner 4.3 Notify client of work completion and obtain sign off

Foundation Skills

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description

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Reading	1.4, 2.1, 3.2, 3.3	• Recognises and interprets textual information from relevant sources to determine specifications, enterprise guidelines and plans
Writing	1.3, 1.8, 4.1, 4.3	• Uses clear, specific and industry related terminology to complete and update workplace documentation and in written communications with clients
Oral Communication	1.3, 1.8, 4.3	• Uses specific and relevant language to clearly articulate operational and site matters • Uses questioning and listening techniques to determine the views and opinions of others
Numeracy	1.6, 1.7	• Analyses numerical information to measure angles, evaluate technical data, interpret results and take measurements
Navigate the world of work	1.1, 1.4, 2.1, 4.2	• Takes personal responsibility for adherence to legal and regulatory requirements, with specific reference to safe industry practices • Understands the main tasks, responsibilities and boundaries of own work
Get the work done	1.2, 1.4, 1.5, 1.8, 2.1-2.3, 3.1-3.3	• Determines job priorities, sequences the steps involved in clearly defined and familiar tasks, and identifies and assembles the resources and access required • Takes responsibility for routine decision making by selecting from a range of predetermined options in routine situations, identifying and taking situational factors into account • Identifies and implements standard solutions for routine problems

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTRFN201 Install a satellite antenna	ICTRFN2163B Install a satellite antenna	Updated to meet Standards for Training Packages	Equivalent unit

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Links

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Assessment Requirements for ICTRFN201 Install a satellite antenna

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- prepare the site and obtain resources in preparation for installation
- determine satellite type and orientation
- assemble, install, align and test a satellite antenna according to plans and specifications, and site specific safety requirements
- conduct performance tests according to manufacturer's specifications and enterprise guidelines.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline the following features of a satellite antenna:
  - directivity
  - operation of parabolic reflector and feedhorn
  - optimum placement
  - pattern
  - polarisation
- discuss bit error ratio (BER)
- summarise coaxial cable types and properties
- discuss electromagnetic waves with reference to:
  - absorption by trees and buildings
  - effect of weather on absorption
  - awareness of exposure to electromagnetic radiation (EMR)

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- outline legislation, codes of practice and other formal agreements that directly impact on antenna installation
- explain modulation:
  - bandwidth
  - individual spectrum shape of digital satellite television signals
- discuss modulation error ratio (MER)
- outline radio frequency (RF) spectrum terminology related to bands used for satellite broadcasting (C, S, L, Ku, Ka bands)
- outline satellite antenna product knowledge
- summarise signal level expressed in dBuV units
- explain specific work health and safety (WHS) requirements that impact on the installation of satellite antenna equipment.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications – radio frequency networks field of work and include access to:

- a suitable site for satellite antenna installation
- a range of antennas and cables currently used in industry
- a range of general tools and test equipment required for satellite antenna installation and testing.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTRFN202 Install a terrestrial antenna

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to assemble, connect and test receiving antenna equipment according to plans, specifications and site specific requirements.

It applies to individuals who might work on single and multiple dwellings, commercial buildings and other telecommunications structures that may be new or existing, stand alone or be a part of a site with multiple antennas.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Unit Sector

Telecommunications – radio frequency networks

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for work on terrestrial antenna	1.1 Prepare for installation, applying all relevant legislation, codes, regulations and standards, and identify any safety issues 1.2 Organise resources to be available on site 1.3 Contact client to arrange access to site and notify about possible

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	outage 1.4 Organise tools and equipment, and ensure they are in safe working order and adjusted to manufacturer's specifications
2. Assemble and mount antenna and coaxial cable	2.1 Assemble antenna on site according to plans, specifications and enterprise guidelines using safe industry practice 2.2 Connect coaxial cable to antenna and install lightning protection devices 2.3 Mount antenna to structure, and set polarisation and initial antenna azimuth and elevation
3. Test and align antenna system	3.1 Connect installed antenna system to appropriate test equipment and pan antenna to optimise signal across all specified channel frequencies 3.2 Conduct performance tests according to manufacturer's specifications and enterprise guidelines 3.3 Interpret test results, compare with manufacturer's design specifications and make adjustments
4. Complete administrative duties	4.1 Record test results and complete appropriate records 4.2 Secure and clean up site to original condition in environmentally safe manner 4.3 Notify client of work completion and obtain sign off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.4, 2.1, 3.2, 3.3	• Recognises and interprets textual information from relevant sources to determine specifications, enterprise guidelines and plans
Writing	1.3, 4.1, 4.3	• Uses clear, specific and industry related terminology to complete and update workplace documentation and in written communications with clients
Oral Communication	1.3, 4.3	• Uses specific and relevant language to clearly articulate operational and site matters, and uses questioning and listening techniques to determine the views and opinions of others

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Numeracy	3.3	• Analyses numerical information to interpret and evaluate technical data and results, and to take measurements
Navigate the world of work	1.1, 1.4, 2.1, 4.2	• Takes personal responsibility for adherence to legal and regulatory requirements, with specific reference to safe industry practices • Understands the main tasks, responsibilities and boundaries of own work
Get the work done	1.1, 1.2, 1.4, 2.1-2.3, 3.1-3.3	• Determines job priorities, sequences the steps involved in clearly defined and familiar tasks, and identifies and assembles the resources and access required • Takes responsibility for routine decision making by selecting from a range of predetermined options in routine situations, identifying and taking some situational factors into account • Identifies and implements standard solutions for routine problems

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTRFN202 Install a terrestrial antenna	ICTRFN2164B Install a terrestrial antenna	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTRFN202 Install a terrestrial antenna

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- organise the site and obtain relevant resources in preparation for installation
- assemble, install, align and test a terrestrial antenna according to plans and specifications, and site specific safety requirements
- conduct performance tests according to manufacturer's specifications and enterprise guidelines.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline the following features of an antenna:
  - directivity
  - front to back ratio
  - optimum placement
  - pattern
  - polarisation
- discuss bit error ratio (BER)
- summarise coaxial cable types and properties
- discuss electromagnetic waves including:
  - absorption by trees and buildings
  - awareness of exposure to electromagnetic radiation (EMR)
  - reflection

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- outline legislation, codes of practice and other formal agreements that directly impact on antenna installation
- explain modulation including:
  - bandwidth
  - individual spectrum shape of analog and digital television signals and digital audio broadcasting plus (DAB+) digital radio signals
- discuss modulation error ratio (MER)
- outline radio frequency (RF) spectrum including:
  - Australian DAB+ digital radio channel frequencies
  - Australian television ultra high frequency (UHF) and very high frequency (VHF) channel plan (digital and analog)
  - terminology related to bands used for broadcasting (Bands I , II, III, IV and V)
- explain signal level expressed in dBuV units
- discuss specific work health and safety (WHS) requirements that impact on the installation of terrestrial antenna equipment
- summarise television antenna product knowledge.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications – radio frequency networks field of work and include access to:

- a suitable site for satellite antenna installation
- a range of antennas and cables currently used in industry
- a range of general and test equipment required for satellite antenna installation and testing.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTRFN301 Install a radio communications antenna and feedline

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to install and test a communications antenna and feedline on a range of fixed or mobile structures

It applies to individuals working as telecommunications and radio communications technicians who operate within cellular, radio broadband and digital TV reception applications. Installations may be new or existing, standalone or part of a site with multiple antennas.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Unit Sector

Telecommunications – radio frequency networks

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan assembly of antenna system	1.1 Arrange access to site according to required procedure 1.2 Apply all relevant legislation, codes, regulations and standards in planning process

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	1.3 Obtain relevant antenna specifications, requirements and radio communication site management book (RCSMB) from appropriate personnel 1.4 Organise appropriate installation personnel to be available on site 1.5 Assess relevant hazard levels from RCSMB and take appropriate preventative action according to prescribed safety requirements 1.6 Identify other antennas at site location and notify those who may be affected by outages 1.7 Inspect antenna system and feedline for physical damage before further work is performed 1.8 Organise tools and equipment and ensure they are in safe working order and adjusted to manufacturer's specifications
2. Assemble, mount and align antenna and prepare feedline	2.1 Follow site specific safety requirements and enterprise work health and safety (WHS) processes and procedures 2.2 Assemble antenna system in safe manner according to manufacturer's instructions 2.3 Mount antenna with correct azimuth and polarisation according to manufacturer's instructions and work practices 2.4 Install radome to antenna if provided 2.5 Install lightning protection systems according to plans and specifications 2.6 Align antenna in horizontal and vertical planes to maximise signal
3. Test antenna installation and document test results	3.1 Conduct performance tests in safe manner according to manufacturer's specifications and instructions 3.2 Record, interpret and compare test results with manufacturer's data or design specifications 3.3 Confirm correct overall operation of antenna system
4. Complete administrative tasks and clean up site	4.1 Complete and store appropriate records and test results according to enterprise policy 4.2 Label radio frequency (RF) transmitter equipment and feedlines according to legislation 4.3 Notify all affected by outage that normal operation can resume 4.4 Clean, pack and store all tools and test equipment, and organise transport in suitable protective casing where appropriate 4.5 Restore any changes made to worksite to client's satisfaction and obtain sign off

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 1.8, 2.2, 2.5, 3.1, 4.1	• Recognises and interprets textual information from relevant sources to determine specifications, enterprise guidelines, policy and instructional material
Writing	1.4, 1.6, 3.2, 4.1-4.3	• Uses clear, specific and industry related terminology to complete and update workplace documentation and in written communications with clients
Oral Communication	1.3, 1.4, 1.6, 4.3	• Uses specific and relevant language to clearly articulate operational and site matters and appropriate tone for successful negotiations • Uses questioning and listening techniques to determine the view and opinions of others
Numeracy	2.6, 3.1, 3.2	• Analyses numerical information to evaluate technical data and interpret results, take measurements and correctly calibrate equipment
Navigate the world of work	1.5, 2.1-2.3, 4.2	• Takes personal responsibility for adherence to legal and regulatory requirements with specific reference to safe industry practices • Understands the main tasks, responsibilities and boundaries of own work
Get the work done	1.1, 1.6-1.8, 2.3-2.5, 3.1, 3.3, 4.1, 4.4, 4.5	• Determines job priorities, sequences the steps involved in clearly defined and familiar tasks, and identifies and assembles the resources and access required • Takes responsibility for routine decision making by selecting from a range of predetermined options in routine situations, identifying and taking situational factors into account • Identifies and implements standard solutions for typical installation challenges • Follows routine procedures for using digital technology to enter, store and retrieve information directly relevant to own enterprise policy

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTRFN301 Install a radio communications antenna and feedline	ICTRFN3055A Install a radio communications antenna and feedline	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTRFN301 Install a radio communications antenna and feedline

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- determine installation requirements and ensure site inspection activities are conducted prior to installation
- conduct installation of a communications antenna according to plans and specifications
- assess hazard levels at a radio frequency (RF) site and apply knowledge of safety precautions for self, fellow workers and the public
- mount an antenna, connect a transmission line and physically align an antenna
- use appropriate test equipment to perform a return loss sweep measurement or a measurement of forward and reflected power on at least two different antenna systems.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline current industry practice for antenna installation including:
  - earthing
  - lightning protection
- describe the procedures and equipment required for:
  - antenna sweep testing to measure return loss
  - measurement of distance to fault
  - measurement of feedline insertion loss
  - measurement of forward and reflected RF power
- summarise features of instrument and equipment test methods and performance requirements

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- outline legislation, codes of practice and other formal agreements that directly impact on operation and testing of radio communications antennas and equipment
- identify the general components and installation of antennas and feedlines
- discuss the application of RF and electromagnetic radiation (EMR) standards and specific work health and safety (WHS) requirements
- discuss the impact on the use and testing of radio communications instruments and equipment
- identify the types of antennas that can withstand extreme environments
- summarise typical issues and challenges that occur in telecommunications antenna installations.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications – radio frequency networks field of work and include access to:

- a site for antenna installation
- a range of antennas and feedlines currently used in industry
- a range of general tools and test equipment required for antenna installation and testing.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTRFN302 Install mobile telecommunications in motor vehicles

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to fit radio transceivers and cellular mobile phone handsets with powered docking cradles and to install peripheral components such as external antenna, microphone, loudspeaker, mobile data terminals and global positioning systems (GPS) in domestic, commercial or industrial motor vehicles.

It applies to individuals working as installers and technicians who liaise with clients to determine all technical requirements and interpret all regulatory and legislative requirements appropriately.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – radio frequency networks

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan for installation of mobile telecommunications in motor vehicles	1.1 Obtain relevant legislation, codes, regulations and standards and follow work health and safety (WHS) and environmental requirements for given work 1.2 Obtain mobile telecommunications equipment and manufacturer's

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	installation documentation 1.3 Determine critical automotive electrical systems that need to be considered during installation process to prevent any damage to vehicle system 1.4 Verify installation requirements from client and advise client of issues affecting performance 1.5 Obtain tools and test equipment required for safe work practices
2. Install mobile equipment	2.1 Attach primary mobile telecommunications equipment to vehicle using fixing and fastening hardware, clear of air bag deployment and according to client, vehicle and equipment manufacturer and WHS requirements 2.2 Wire primary mobile telecommunications equipment to vehicle electrical system using industry wiring practices without impacting on other electrical systems 2.3 Attach and wire peripheral mobile telecommunications equipment and components of installation to client’s and manufacturer's requirements 2.4 Replace any existing fittings or vehicle components removed during installation and restore to original condition 2.5 Test completed installation to verify that operation of critical automotive electrical systems have not been affected, and rectify if required
3. Complete installation	3.1 Restore vehicle and worksite to client's satisfaction by disposing of waste materials according to environmental requirements 3.2 Note and document any damage that may have occurred during installation and report according to enterprise procedures 3.3 Instruct client on operation of installed equipment 3.4 Complete all administrative tasks and file according to enterprise requirements

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	2.1, 2.3, 3.2,	• Recognises and interprets textual information from relevant sources to determine job specifications and

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	3.4	regulatory and legislative requirements
Writing	1.4, 3.2	• Uses clear, specific and industry related terminology to complete and update workplace documentation and in written communications with clients
Oral Communication	1.4, 3.3	• Uses specific and relevant language to clearly articulate technical information and appropriate tone for successful negotiations • Uses questioning and listening techniques to determine the understanding of others
Numeracy	2.2, 2.3, 2.5	• Performs calculations appropriate for measuring and estimating materials and for testing installations
Navigate the world of work	1.1, 2.1, 3.2	• Takes personal responsibility for adherence to legal and regulatory requirements, with specific reference to safe industry practices • Understands the nature and purpose of own role and associated responsibilities, and how it contributes to the work of others in the immediate work context
Get the work done	1.1-1.3, 1.5, 2.1-2.5, 3.4	• Determines job priorities, sequences the steps involved in clearly defined and familiar tasks, and identifies and assembles the resources and access required • Takes responsibility for routine decision making by selecting from a range of predetermined options in routine situations, identifying and taking situational factors into account • Identifies and implements standard solutions for typical installation challenges • Reflects on outcomes and identifies what worked and where things could be done differently in the future

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTRFN302 Install mobile telecommunications in motor vehicles	ICTRFN3070A Install mobile telecommunications in motor vehicles	Updated to meet Standards for Training Packages	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTRFN302 Install mobile telecommunications in motor vehicles

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- obtain installation parameters and compliance requirements in preparation for installation
- install cable loom, wiring mobile and peripheral equipment
- test the equipment to verify correct installation and operation.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline customer service principles, particularly dealing with clients face to face
- discuss electrical fundamentals
- summarise electromagnetic radiation (EMR)
- discuss enterprise or service-specific knowledge of products and services supplied
- outline objectives and methods of training for product use for client education
- summarise work health and safety (WHS) principles and enterprise-specific job safety analysis (JSA) requirements
- provide an overview of mobile radio and cellular radio product range and connection methods
- summarise pre-installation enterprise-specific requirements
- explain the following aspects of radio frequency (RF):
  - principles
  - safety
  - theory
- explain return path technology

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- discuss telephony principles to support return path awareness
- summarise test set ups for final testing
- outline vehicle electrical, electronics and computer-managed systems.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications – radio frequency networks field of work and include access to:

- vehicles and sites at which installation may be conducted
- testing equipment currently used in industry
- relevant regulatory and equipment documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTRFN303 Install WiMAX customer premises equipment broadband wireless access equipment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to connect, set up and test Worldwide Interoperability for Microwave Access (WiMAX) customer premises equipment (CPE) in homes and commercial premises.

It applies to individuals working as technicians who connect indoor units to a customer network.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – radio frequency networks

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for WiMAX equipment installation	1.1 Arrange access to site according to required procedure 1.2 Verify customer requirements, type of WiMAX CPE equipment and location of proposed installation according to plans obtained from authorised personnel

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	1.3 Prepare tools, equipment and CPE required for installation
2. Install outdoor unit and antenna	2.1 Make worksite safe by identifying existing and potential hazards 2.2 Comply with relevant legislation, codes, regulations and standards, work health and safety (WHS) and environmental requirements 2.3 Mount outdoor unit according to manufacturer's specifications and enterprise plans 2.4 Connect outdoor unit to indoor unit using specified cable 2.5 Position antenna towards distant WiMAX base station for preliminary orientation 2.6 Align unit for maximum signal strength using received signal strength indication (RSSI) display 2.7 Record installation and alignment details 2.8 Connect indoor unit and accessories to customer equipment
3. Test performance of installation	3.1 Test WiMAX CPE according to manufacturer's procedures 3.2 Check operating environment does not degrade test results 3.3 Evaluate test results to verify operational performance with customer
4. Restore site and complete documentation	4.1 Restore worksite to customer's satisfaction 4.2 Complete reports on installation 4.3 Notify customer and obtain sign off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 2.3, 3.1	• Recognises and interprets textual information from relevant sources to determine job specifications and regulatory and legislative requirements
Writing	2.7, 4.2, 4.3	• Uses clear, specific and industry related terminology to complete and update workplace documentation and in written communications with customers

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Numeracy	2.6, 3.3	• Analyses numerical information to interpret technical data
Oral Communication	1.2, 4.3	• Uses specific and relevant language to clearly articulate technical information • Uses appropriate tone and listening techniques to determine the understanding of others
Navigate the world of work	2.1, 2.2	• Takes personal responsibility for adherence to legal and regulatory requirements, with specific reference to safe industry practices • Understands the nature and purpose of own role and associated responsibilities
Get the work done	1.1-1.3, 2.3-2.6, 2.8, 3.1, 3.2, 4.1	• Determines job priorities and sequences the steps involved in clearly defined and familiar tasks, and identifies and assembles the resources and access required • Takes responsibility for routine decision making by selecting from a range of predetermined options in routine situations, identifying and taking some situational factors into account • Identifies and implements standard solutions for typical installation challenges • Reflects on outcomes and identifies what worked and where things could be done differently in the future

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTRFN303 Install WiMAX customer premises equipment broadband wireless access equipment	ICTRFN3146A Install WiMAX customer premises equipment broadband wireless access equipment	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTRFN303 Install WiMAX customer premises equipment broadband wireless access equipment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- ensure that the site access, resources and installation requirements are confirmed prior to installation
- install and test Worldwide Interoperability for Microwave Access (WiMAX) customer premises equipment (CPE) outdoor units
- install indoor unit and connect to customer network
- reinstate site, document and complete installation reports.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe the wireless standard ‘WiMAX’ including:
  - general characteristics of WiMAX networks e.g. mobile broadband and internet access
  - applications of WiMAX technology
  - terminology associated with WiMAX technologies
  - range and function of gateway devices
  - protocols IEEE 802.16 and IEEE 802.11
- identify and discuss the relevant legislation, codes, regulations and standards, work health and safety (WHS) and environmental requirements
- explain the impact of location on microwave propagation and losses.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications – radio frequency networks field of work and include access to:

- sites on which WiMAX installations can be conducted
- tools and equipment required for installation
- relevant regulatory and equipment documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTRFN304 Construct and test a radio communications device

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to plan, build and review a radio communications transmitting or receiving device.

It applies to individuals working as radio maintenance technicians, radio installers and radio repairers who use specialist equipment and work within regulatory and legislative frameworks.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – radio frequency networks

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to construct radio communications device	1.1 Prepare for construction, applying all relevant legislation, codes, regulations and standards, and identify any safety issues 1.2 Determine details of radio communications device to be constructed from project specifications 1.3 Produce wiring diagram, component list and block diagram of radio

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	communications device to prepare for construction and testing of device 1.4 Draw up plans showing method of construction and enclosure details 1.5 Designate suitable test points along signal flow paths on circuit diagram for testing of functional blocks 1.6 Produce test setups to evaluate performance of radio communications device 1.7 Obtain tools and test equipment
2. Construct and test radio communications device	2.1 Assemble radio communications device according to circuit diagram and layout drawing 2.2 Test performance and operation of individual functional blocks and overall radio communications device according to test regime 2.3 Transmit or receive signals to evaluate qualitative performance through radio communications device
3. Complete documentation and clean up worksite	3.1 Document results of test procedures and compare with initial project specifications 3.2 Finalise project report and make recommendations for improvement to radio communications device 3.3 Remove waste from worksite according to environmental requirements and restore site to safe condition

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.2	• Recognises and interprets textual information from relevant sources to determine job specifications and regulatory and legislative requirements
Writing	1.3-1.5, 3.1, 3.2	• Uses clear, technically specific language, appropriate formatting and diagrammatic information to complete and update workplace documentation
Numeracy	2.3	• Analyses numerical information when undertaking test measurements, interpreting results and evaluating performance

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Navigate the world of work	1.1, 3.3	• Takes personal responsibility for adherence to legal and regulatory requirements, with specific reference to safe industry practices • Understands the nature and purpose of own role and associated responsibilities
Get the work done	1.1, 1.6, 1.7, 2.1, 2.2, 3.2	• Determines job priorities, sequences the steps involved in clearly defined and familiar tasks, and identifies and assembles the equipment, resources and access required • Takes responsibility for routine decision making by selecting from a range of predetermined options in routine situations, identifying and taking situational factors into account • Identifies and implements standard solutions when troubleshooting and managing contingencies to adapt assembly and review procedures • Reviews outcomes and identifies technical improvements that could be made

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTRFN304 Construct and test a radio communications device	ICTRFN3155A Construct and test a radio communications device	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTRFN304 Construct and test a radio communications device

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- plan and prepare for construction of a radio communications device
- prepare a wiring diagram and component list
- construct a radio communications device
- test a radio communications device.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain electrical symbols and circuit diagrams
- summarise the general principles of radio communications and radio propagation
- identify and outline the characteristics of:
  - radio communications components
  - device pinouts
  - part numbers
  - polarities
  - ratings
- summarise the operation and characteristics of:
  - amplifiers
  - demodulators
  - mixers
  - modulators

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  - oscillators
- explain the principles of modulation.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications – radio frequency networks field of work and include access to:

- sites where radio communications devices may be constructed and tested
- test instruments currently used in industry
- relevant regulatory and equipment documentation that impacts on work activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTRFN305 Operate and maintain radio communications technical instruments and field equipment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to take measurements, find faults, undertake minor repairs and commission new instruments and equipment.

It applies to individuals with proficient technical skills including field officers from regulatory authorities or other private and public organisations. In this role, individuals must comply with radio communications transmitter licensing requirements, operator certificates for maritime and aeronautical services, work health and safety (WHS) and electromagnetic radiation (EMR) licensing requirements.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – radio frequency networks

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for use of instruments and field equipment	1.1 Plan and prepare work according to site procedures, operating environment and relevant legislation, codes, regulations and standards 1.2 Select measurements required to meet performance outcomes

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	1.3 Read, interpret and use equipment and system manuals, specifications and relevant organisational policy to determine work requirements 1.4 Select and ensure equipment for work activities is ready for operation 1.5 Determine, address and report potential risks, hazards and environmental issues 1.6 Adhere to relevant emergency procedures, policy guidelines and WHS procedures to ensure safety of personnel and plant
2. Test instruments and field equipment	2.1 Perform safety checks according to instrument and equipment manual and organisational procedures 2.2 Confirm equipment is calibrated and calibration label is within approved timeframes 2.3 Select appropriate traceable calibrated equipment where measurements are required to be traceable according to national standards 2.4 Label and report damaged or unsafe instruments and field equipment, and send for service 2.5 Update operational log books
3. Operate instruments and field equipment	3.1 Optimise instrument and equipment settings for particular measurement or analysis 3.2 Perform measurements with optimum precision given field and technical constraints 3.3 Assess data for accuracy and precision against quality control information, known standards and references within measurement uncertainty
4. Maintain instruments and field equipment	4.1 Use fault finding techniques to verify and rectify faults 4.2 Perform preventative maintenance within limits of authorisation and report equipment wear and faults 4.3 Replace defective parts and make adjustments according to equipment specifications 4.4 Seek expert help from appropriate colleagues where problems are encountered 4.5 Update maintenance and calibration records according to organisational procedures
5. Commission new instruments and equipment	5.1 Arrange commissioning procedures with manufacturer's agent 5.2 Unpack, check and assemble instruments and equipment according to manufacturer's warranty requirements

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	5.3 Check instrument and equipment performance against specifications prior to acceptance of item 5.4 Prepare operating instructions and make available to relevant personnel

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.3, 3.3, 4.3, 5.2, 5.3	• Recognises and interprets information from relevant sources to determine technical specifications and regulatory and legislative requirements
Writing	1.5, 2.4, 2.5, 4.2, 4.5, 5.1, 5.4	• Uses clear, specific and industry related terminology to complete and update workplace documentation and in written communications with relevant internal and external personnel
Oral Communication	1.5, 4.2, 4.4, 5.1	• Uses specific and relevant language and appropriate tone to clearly articulate technical, operational and legal information to internal and external personnel • Uses listening techniques to determine the understanding of others
Numeracy	3.2, 3.3, 5.3	• Analyses numerical information when undertaking test measurements, interpreting results, calibrating equipment and evaluating performance
Navigate the world of work	1.1, 1.6, 2.1, 2.3, 4.5	• Takes personal responsibility for adherence to legal and regulatory requirements, with specific reference to the safety of self, other personnel and the plant • Understands the nature and purpose of own role and associated responsibilities
Get the work done	1.1, 1.2, 1.4, 2.2, 2.4, 3.1, 4.1-4.3, 5.2	• Determines job priorities, sequences the steps involved in clearly defined and familiar tasks, and identifies and assembles the instruments, equipment and other resources required • Takes responsibility for routine decision making by selecting from a range of predetermined options in routine situations, identifying and

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		taking situational factors into account • Identifies and implements standard solutions for typical equipment and instrument faults • Reflects on outcomes and identifies what worked and where things could be done differently in the future

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTRFN305 Operate and maintain radio communications technical instruments and field equipment	ICTRFN3175A Operate and maintain radio communications technical instruments and field equipment	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTRFN305 Operate and maintain radio communications technical instruments and field equipment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- obtain read and interpret radio communications instrument operating documentation
- prepare, operate and maintain radio communications instruments and field equipment appropriate to a radio communications environment
- comply with site risk control, work health and safety (WHS), environmental, quality and communication requirements.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- summarise the features and operating requirements of calibrated equipment and test equipment including:
  - digital radio communications measuring equipment
  - radio frequency (RF) termination
  - spectrum analyser
  - power meter
  - modulation analyser
- outline features of instrument and equipment test methods and performance requirements
- explain legislation, codes of practice and other formal agreements that directly impact on operation and testing of radio communications instruments and equipment
- outline manufacturer’s requirements for operation and testing of radio communications equipment and calibrated equipment
- summarise measurements according to test specifications

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- list radio communications instruments and equipment
- list and describe the common WHS requirements that impact on the use and testing of radio communications instruments and equipment
- discuss typical issues and challenges that occur with radio communications instruments and field equipment.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications – radio frequency networks field of work and include access to:

- sites on which instruments and field equipment can be operated
- field measurement equipment currently used in industry
- relevant instrument and equipment manuals and other procedural documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTRFN402 Select antenna system for radio communications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to interpret industry practices and theories, and select appropriate antenna equipment for small projects or parts of larger projects to a job specification.

It applies to individuals working alone or responsible for a technical team within regulatory authorities or other private and public organisations where they combine technical radio communications skills with broader organisational and administrative skills.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – radio frequency networks

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to select antenna system	1.1 Establish extent of project from design brief or specification within team environment 1.2 Obtain and review plans and drawings of existing or proposed installation site

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	1.3 Determine whether antenna system hardware requires secure hut or shelter 1.4 Determine antenna requirements and antenna feedline requirements from design brief or specifications, and research available commercial products 1.5 Determine earthing components to meet regulatory and earthing requirements of antenna system 1.6 Prepare antenna feedline route to comply with job specifications and regulatory requirements 1.7 Identify installation options, and assess against performance requirements and client requirements
2. Select antenna system	2.1 Evaluate potential antenna system solutions that satisfy required performance, budgetary and regulatory requirements, and are suitable for installation in specified environment 2.2 Make recommendations and select optimum antenna system
3. Document antenna system *selection*	3.1 Document calculations, final specifications and reasons for selection of antenna system 3.2 Prepare final report, including documentation and drawings of selected antenna system, and distribute to appropriate persons in accordance with enterprise policies and procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 1.4, 1.6, 2.1, 3.2	• Examines and interprets plans, specifications and data from relevant sources to determine all technical requirements
Writing	3.1, 3.2	• Uses clear, specific and industry related terminology in appropriate formats to complete and update workplace documentation
Numeracy	1.4, 2.1, 2.2	• Evaluates and reviews numerical information when evaluating budgetary considerations, test results and technical data, and when converting values to ratios
Interact with others	1.1, 2.2, 3.2	• Collaborates with others as part of familiar routine activities and contributes to specific activities requiring joint responsibility and accountability

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		• Understands what to communicate to relevant personnel in routine work situations
Get the work done	1.2, 1.3, 1.5-1.7, 2.1, 2.2	• Determines job priorities and works logically and systematically to undertake clearly defined and familiar tasks • Identifies and assembles the instruments, equipment and other resources required to competently undertake the job • Uses formal decision making processes with support to clarify goals in more complex, non-routine situations • Gathers information and identifies and evaluates choices against a limited set of criteria • Applies formal problem solving processes, breaking difficult issues into manageable parts and identifying relevant options for action

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTRFN402 Select antenna system for radio communications	ICTRFN4158A Select antenna system for radio communications	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTRFN402 Select antenna system for radio communications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- identify the antenna installation parameters
- select an antenna system required to meet the parameters
- determine the feedline installation from design and specifications
- document the recommendations for the antenna system selection
- comply with specifications and regulatory requirements.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe the principles of antenna wave propagation and the impact on antenna array design
- describe the principles of transmission line design and operation, and the impact on antenna design and installation including:
  - allowable loss in dB
  - characteristic impedance
  - mechanical characteristics
  - method of securing
  - radio frequency (RF) connector type
  - weatherproofing.
- describe the process for selecting an antenna design based on the application and performance requirements
- identify and describe a range of antenna systems

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- summarise specific issues related to antenna installations and the creation of particular radiation patterns
- identify and describe the regulatory and industry standards relevant to antenna installations.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications – radio frequency networks field of work and include access to:

- antenna resources such as manufacturers' data sheets, specifications and catalogues
- transmission line resources such as manufacturers' data sheets, specifications and catalogues.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTRFN403 Test and repair cellular network equipment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to analyse cell performance and perform diagnostic tests and repairs on sub-elements and subsystems within cellular networks.

It applies to individuals working as field officers and technicians who may be responsible under supervision for small projects or parts of larger projects and for the coordination of projects in sites remote from the organisational headquarters.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – radio frequency networks

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to test cellular network equipment	1.1 Produce alarm list from cellular network subsystem that shows faults or disturbances 1.2 Reset sub-element according to manufacturer's specifications 1.3 Clear or block alarms and adjust alarm thresholds according to manufacturer's specifications
2. Test cellular network	2.1 Test parameters influencing cell performance and record

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sub-element equipment	performance for a range of field settings 2.2 Test, record and report sub-element performance according to manufacturer's specifications 2.3 Run diagnostic test on sub-element 2.4 Swap working or executing sub-element with spare or idle unit to allow software upgrades 2.5 Swap working or executing sub-element with spare or idle sub-element to allow replacement of hardware
3. Rectify faults in cellular network equipment subsystems	3.1 Locate faulty sub-element within subsystem and identify fault 3.2 Identify faulty parts or equipment and replace or repair according to service agreement 3.3 Record fault details and rectification summary 3.4 Hand over and sign off with client

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.2, 1.3, 2.2	• Recognises and interprets information from relevant sources to determine technical specifications
Writing	1.1, 2.1, 2.2, 3.3, 3.4	• Uses clear, specific and industry related terminology to complete and update workplace documentation and in written communications with clients
Oral Communication	3.4	• Liaises with internal and external personnel about technical requirements using specific and relevant language • Uses listening and questioning techniques to confirm understanding
Numeracy	2.1-2.3	• Evaluates and reviews numerical information when interpreting measurements
Get the work done	1.2, 1.3, 2.1-2.5, 3.1, 3.2	• Determines job priorities and works logically and systematically to undertake clearly defined and familiar tasks • Implements actions according to a predetermined plan, making slight adjustments if necessary and

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		addressing some unexpected issues • Takes responsibility for routine decision making by selecting from a range of predetermined options in routine situations, identifying and taking situational factors into account • Diagnoses and implements standard solutions to network problems • Understands the purposes and specific functions of common digital systems and uses them effectively to complete routine tasks

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTRFN403 Test and repair cellular network equipment	ICTRFN4159A Test and repair cellular network equipment	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTRFN403 Test and repair cellular network equipment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- prepare the cellular network alarm system
- produce an alarm list and use this to locate faults
- test cellular network parameters and performance
- measure output power received around a cell
- run diagnostic tests on sub-elements and subsystems
- locate and repair faulty sub-elements and subsystems.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain anti-static protection and its importance and potential effect on cellular network equipment
- summarise cellular antenna installation procedures
- outline electrical concepts and measurements required for cellular network repairs
- explain electromagnetic radiation (EMR) and mitigation
- list the common network components and describe their basic functions
- provide an overview of:
  - the progression of generations of cellular networks
  - features and operating requirements of test equipment
- outline procedures for repairs and swap activities
- summarise test operation of cellular network equipment
- list and describe the tests required for network components

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- describe the importance of voltage levels and polarity
- describe the precautions and actions required to minimise, control or eliminate hazards related to cellular network equipment installations.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications – radio frequency networks field of work and include access to:

- a site for mobile phone network tests and measurements
- performance testing software
- relevant legislation and documentation to test and repair network equipment.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTRFN404 Undertake radio communications signals monitoring

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to check radio communications signals for interference management, investigation, licence conditions intelligence and frequency occupancy purposes with discretion to determine appropriate action according to relevant legislation and regulations.

It applies to individuals working as field officers from regulatory authorities or other private and public organisations. They combine technical skills with broader organisational and administrative skills to monitor and action non-compliance of radio communications.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Unit Sector

Telecommunications – radio frequency networks

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for radio communications	1.1 Prepare for given work according to relevant legislation, codes, regulations and standards, including work health and safety (WHS) issues and possible hazards

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signals monitoring	1.2 Identify specific triggers that lead to need for monitoring activities 1.3 Determine monitoring coordinates as result of client complaint 1.4 Determine extent and nature of communications problem through desktop research and relevant information 1.5 Enter necessary details into appropriate work management system
2. Plan and organise monitoring activities	2.1 Determine monitoring activities and responsibilities according to organisational requirements 2.2 Determine procedures, timeframes, resources and equipment requirements for self and others according to organisational and task requirements 2.3 Obtain resources and equipment and prepare according to organisational and task requirements 2.4 Identify communication strategies to make clients aware of their obligations under relevant legislation, codes, regulations and standards according to organisational policies and procedures 2.5 Update and review procedural and information guides as required 2.6 Implement risk management strategies as required according to set procedures and timelines
3. Undertake monitoring	3.1 Carry out monitoring activities according to organisational and legislative requirements, including WHS 3.2 Use and maintain resources and equipment according to organisational and task requirements 3.3 Identify and confirm communications and/or interference problems 3.4 Locate position and source of communications and/or interference problems 3.5 Identify organisation responsible for communications and/or interference problems 3.6 Undertake compliance analysis of unlicensed, unauthorised and non-standard equipment if appropriate 3.7 Provide advice to operational and technical subordinate officers according to organisational policies and procedures as required
4. Act on non-compliance	4.1 Provide information to client and take action as result of failure to achieve compliance according to organisational guidelines and legislative requirements based on seriousness of possible breach 4.2 Identify contraventions of compliance requirements and report recommended action according to organisational policies and procedures 4.3 Refer serious or complex situations for advice or resolution according to organisational policies and procedures

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	4.4 Use relevant collection methods to gain information and evidence about elements of each offence to be prosecuted and provide according to legislation, procedures and rules of evidence 4.5 Conduct and fulfil court attendance requirements in compliance with organisational guidelines as required 4.6 Ensure case is finalised according to court outcomes and organisational guidelines
5. Provide reports and information	5.1 Interpret requirements of relevant legislation and provide information and advice on technical and operational matters 5.2 Advise clients affected by outcomes within limits of privacy legislation 5.3 Maintain records and prepare and provide reports according to organisational requirements 5.4 Update any compliance management systems with relevant findings and outcomes

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.4, 3.5, 4.4, 5.1	• Analyses and consolidates information and data from a range of sources, against defined criteria and requirements, and checks for accuracy and completeness
Writing	1.5, 2.5, 3.7, 4.1, 4.2, 5.2-5.4	• Accurately records and completes organisational documents and correspondence using clear language and correct spelling, grammar and terminology
Oral Communication	1.4, 3.7, 4.2, 5.2	• Uses collaborative and inclusive techniques, including active listening and questioning and reading of verbal and non-verbal signals, to convey and clarify information and to confirm understanding
Numeracy	2.2	• Applies numerical modelling skills to identify, analyse and evaluate budgetary information, time durations and human resource allocations
Navigate the world	1.1, 2.1-2.5, 3.1, 3.2,	• Accepts responsibility and ownership for the task and makes decisions on completion

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of work	3.5-3.7, 4.1-4.6, 5.1-5.3	parameters and the need for coordination with others • Ensures knowledge of legislative requirements and products is kept up to date to provide accurate information • Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements • Identifies and acts on issues that contravene relevant policies, procedures and legal requirements
Interact with others	1.2, 2.4, 3.3, 3.7, 4.2-4.5	• Selects and uses appropriate conventions and protocols when communicating with clients and co-workers in a range of work contexts • Uses a range of strategies to establish a sense of connection and build rapport with clients and co-workers • Recognises and accommodates basic differences and priorities of others • Cooperates with others and contributes to work practices where joint outcomes are expected and deadlines are to be met • Identifies and explores differences in a diverse range of people in the work context and makes adjustments to communication in recognition of these differences • Recognises behaviours and triggers that contribute to conflict and implements strategies to moderate conflict
Get the work done	1.1-1.4, 2.1-2.5, 3.1-3.7, 4.1-4.6, 5.1, 5.3	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes • Makes routine decisions and implements standard procedures for routine tasks, using formal decision making processes for more complex and non-routine situations • Addresses less predictable problems and initiates standard procedures in response, applying problem solving processes in determining a solution • Contributes to continuous improvement of current work practices by applying basic principles of analytical and lateral thinking • Uses familiar digital technologies and systems to access information, search and enter data and code, present information and

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		communicate with others, cognisant of data security and safety

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTRFN404 Undertake radio communications signals monitoring	ICTRFN4174A Undertake radio communications signals monitoring	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTRFN404 Undertake radio communications signals monitoring

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- comply with site risk control, work health and safety (WHS), environmental, quality and communication requirements
- apply knowledge of appropriate procedures and techniques for conducting radio communications signals monitoring
- perform efficient and effective preparation and monitoring appropriate to a communications environment site
- calibrate, maintain and commission instruments and field equipment
- monitor communications under general direction in a range of different contexts
- respond effectively to different challenges and operational requirements for monitoring, including coping with difficulties, irregularities and breakdowns in routine.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify and summarise the legislation, codes of practice and other formal agreements that directly impact on monitoring of radio communications signals including:
  - specifics of what constitutes an offence
  - responses for non-compliance
  - environmental requirements
  - privacy issues
- outline specific WHS requirements that impact on monitoring in terms of safety of self and public safety including:
  - radio frequency (RF) personal protective equipment

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  - electromagnetic radiation (EMR) at RF transmission sites
  - building site induction requirements
  - environmental conditions
- explain specific monitoring procedures for radio communications and relevant organisational policies and procedures
- summarise characteristics of different environments and workplaces where monitoring takes place
- explain radio communications systems used in the relevant work context
- outline specific issues related to antenna performance including:
  - directivity
  - gain
  - height
- summarise the effects of cable attenuation and impedance mismatch
- outline the effects of ionosphere including:
  - high frequency (HF) propagation
  - warning, fadeout and solar flares
  - ionospheric prediction service (IPS)
- explain modulation methods, AM, FM and digital formats
- explain field strength surveys and EMR measurements
- outline the propagation properties of the terrain
- describe the legal process for prosecuting a complaint and undertaking attendance at court
- describe the process and use of direction finding equipment for HF, very high frequency (VHF), ultra high frequency (UHF) and microwave technologies.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications – radio frequency networks field of work and include access to:

- sites on which monitoring may be conducted
- monitoring and testing equipment currently used in industry
- relevant regulatory and equipment documentation that impacts on monitoring activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTRFN405 Install radio communications base station equipment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skill and knowledge required to operate transmitters, receivers, feedline, multicoupling, data and voice equipment to connect a station in the very high frequency (VHF), ultra high frequency (UHF) or microwave bands.

It applies to individuals working as field officers from private or public organisations. They combine technical radio communications skills with organisational and administrative skills in a range of commercial and community contexts.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – radio frequency networks

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to install radio communications base station equipment	1.1 Assess available installation options against client requirements and relevant legislation, codes, regulations and standards 1.2 Arrange access to site according to required procedure 1.3 Confirm equipment locations

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	1.4 Confirm base station equipment listings and manufacturer's and enterprise documents against installation brief 1.5 Review installation briefs in consultation with designers or manufacturers 1.6 Adjust tools and equipment to manufacturer's specification
2. Install equipment and terminate voice and data cables, power cables and radio frequency (RF) cables	2.1 Observe anti-static precautions when handling circuit cards and conduct all work in manner that is safe to self, fellow workers and the public 2.2 Install racks, frames and shelves as required for data and voice frequency (VF) interface equipment, transmitter and receiver 2.3 Position equipment and install according to manufacturer's specifications and design detail 2.4 Label equipment, distribution frames and blocks according to enterprise policy 2.5 Strip cables and terminate conductors according to manufacturer's specifications 2.6 Clean optical fibre connectors using appropriate cleaning techniques 2.7 Connect network termination unit (NTU) cables to data and VF interface unit via distribution frame 2.8 Connect data and VF cables to radio equipment 2.9 Connect digital and analog alarm inputs and outputs to supervisory, control and data acquisition (SCADA) controller 2.10 Connect power cables to rectifier, battery rack, circuit breakers and equipment according to manufacturer's and enterprise documents 2.11 Use computer or handheld device to program internal software in data and VF interface equipment, and transmitter and receiver 2.12 Interconnect multicoupling equipment to antenna feedline and transmitter and receiver units 2.13 Mount lightning protection equipment and earth wire according to specification
3. Connect receiver and transmitter multicoupling equipment to antenna feedline	3.1 Perform distance to fault measurement on antenna feedline 3.2 Perform return loss measurement of overall antenna system at transmitter and receiver connector points 3.3 Record test results
4. Finalise installation and complete	4.1 Complete preliminary tests to verify transmitter and receiver operation prior to commissioning 4.2 Complete installation report, test results and administrative tasks and

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preliminary tests and administrative tasks	forward to appropriate person according to enterprise policy 4.3 Dispose of packaging according to accepted environmental conditions 4.4 Notify appropriate person that base station is ready for commissioning and integration

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1, 1.2, 1.4, 1.6, 2.3-2.5, 2.10, 2.13, 4.3	• Recognises and interprets enterprise, regulatory and technical information from relevant sources to determine all specifications and frameworks
Writing	1.3, 2.4, 3.3, 4.2, 4.4	• Uses clear, specific and industry related terminology to complete and update workplace documentation and in written communications with clients
Oral Communication	1.3, 1.5, 4.4	• Liaises with internal and external personnel about technical requirements using specific and relevant language • Uses listening and questioning techniques to confirm understanding
Numeracy	3.1, 3.2	• Evaluates and interprets technical data according to predetermined specifications and uses mathematical formulas to solve problems
Navigate the world of work	1.1, 2.1	• Takes personal responsibility for adherence to legal and regulatory requirements with specific reference to safety • Understands the nature and purpose of own role and associated responsibilities
Get the work done	1.2, 1.6, 2.2, 2.3, 2.5-2.13, 4.1-4.3	• Determines job priorities of self and others, and works logically and systematically to undertake clearly defined and familiar tasks • Implements actions according to a predetermined plan, making slight adjustments if necessary and addressing some unexpected issues • Takes responsibility for routine decision making by selecting from a range of predetermined options in routine situations, identifying and taking situational factors into account

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		• Diagnoses faults in different situations and implements standard solutions to network problems • Understands the purposes and specific functions of common digital systems and uses them effectively to complete routine tasks

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTRFN405 Install radio communications base station equipment	ICTRFN4177A Install radio communications base station equipment	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTRFN405 Install radio communications base station equipment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- assess the client and installation requirements
- ensure relevant regulations and standards will be applied
- install radio communications base station equipment
- perform distance to fault measurement on feedline
- perform return loss measurement on feedline
- document and complete installation report.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain the following:
  - anti-static precautions
  - radio frequency (RF) radiation hazard awareness
  - network termination unit
  - radio transmitter system
  - radio receiver system
  - multicoupler
  - supervisory, control and data acquisition (SCADA) system inputs and outputs
- outline the operation and purpose of testing equipment
- interpret the meaning of various test results
- identify network element and system specifications

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- outline the principles and performance testing and fault finding techniques of telecommunications networks
- describe the practices and procedures for installation of radio communications equipment for the following:
  - fibre optic connector cleaning techniques
  - computer software installations to various devices
- identify and describe the appropriate test equipment to undertake performance and fault-finding techniques in telecommunications networks including:
  - distance to fault measurement
  - return loss measurement
  - terminate data and voice and RF cable.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications – radio frequency networks field of work and include access to:

- sites on which base station installation can be conducted
- tools and equipment required for installation
- technical specifications, organisational documentation and requirements for installation and testing.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTRFN501 Test cellular handset enhancements and international roaming agreements

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to conduct and analyse the results of testing a subscriber's cellular phone service in a public land mobile network (PLMN) overseas and make recommendations accordingly.

It applies to individuals who work as technical officers and supervisors. They are proficient in the use of specialised testing equipment, are effective communicators and operate with a high degree of autonomy.

No licensing, legislative or certification requirements apply at the time of publication.

Unit Sector

Telecommunications – radio frequency networks

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to conduct roaming tests	1.1 Obtain relevant legislation, codes, regulations and standards for compliance when conducting work 1.2 Identify need for tests from service provider mobile network deployment taskforce 1.3 Develop enterprise test procedure according to roaming arrangements and manufacturer test regime

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	1.4 Arrange access to location where tests are to be conducted according to required procedure 1.5 Select resources needed to conduct tests, complying with roaming arrangements 1.6 Confirm details of international roaming partners and agreements with partner mobile operators 1.7 Advise network operations centre of test details and test schedule
2. Conduct tests and analyse test results	2.1 Conduct tests according to enterprise test procedure 2.2 Analyse recorded test results for roaming compliance and functionality of subscriber identity module (SIM) card and phone enhancements
3. Document results	3.1 Document details of roaming tests, SIM card validity and functionality of phone enhancements, and make recommendations to appropriate person 3.2 Report non-compliance to appropriate person for investigation with international roaming partners and mobile phone manufacturer

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.2, 1.3, 2.1	• Recognises and interprets enterprise, regulatory and technical information from relevant sources to determine all specifications and frameworks
Writing	1.3, 1.6, 1.7, 3.1, 3.2	• Uses clear, specific and industry related terminology to complete and update workplace documentation and in written communications to relevant personnel
Oral Communication	1.2, 1.6, 1.7, 3.1, 3.2	• Provides advice and guidance using relevant language with enterprise personnel, international roaming partners and clients to maintain a client focus and consider client needs • Uses listening and questioning techniques to

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		confirm understanding
Numeracy	2.1, 2.2	• Performs mathematical calculations to check, analyse and confirm results of system tests
Navigate the world of work	1.1	• Takes personal responsibility for adherence to legal and regulatory requirements
Get the work done	1.1, 1.4, 1.5, 2.1, 2.2	• Determines job priorities, resources and equipment. and works logically and systematically to undertake clearly defined and familiar tasks • Implements actions according to a predetermined plan, making slight adjustments if necessary and addressing some unexpected issues • Takes responsibility for routine decision making by selecting from a range of predetermined options in routine situations, identifying and taking situational factors into account • Responds to typical challenges in different situations and implements standard solutions • Uses and investigates new digital technologies and applications to manage and manipulate data, and communicate effectively with others, in a secure and stable digital environment • Uses experiences to evaluate and identify improvements for future work

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTRFN501 Test cellular handset enhancements and international roaming agreements	ICTRFN5097A Test cellular handset enhancements and international roaming agreements	Updated to meet Standards for Training Packages	Equivalent unit

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Links

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Assessment Requirements for ICTRFN501 Test cellular handset enhancements and international roaming agreements

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- collect and collate relevant information in preparation for roaming tests
- conduct tests on international roaming capability and functionality of handset enhancements
- analyse results of testing
- make recommendations based on test results.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- summarise the features and operating requirements of specialised roaming test equipment
- outline information required to operate equipment according to a test specification
- explain legislation, codes of practice and other formal agreements that impact on the work activity
- outline manufacturer’s requirements for safe operation of equipment
- summarise mobile phone network standards and specifications
- explain specific work health and safety (WHS) requirements relating to the activity and site conditions
- describe the testing and analysis process and procedures for cellular handsets.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications – radio frequency networks field of work and include access to:

- a site where tests on handsets and international roaming agreements may be conducted
- testing equipment currently used in industry
- equipment, system manuals, specifications and relevant enterprise policy and documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTRFN502 Test and measure cellular phone and network equipment performance

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to analyse test results and recommend modifications to the network.

It applies to individuals working as field officers and supervisors from telecommunications carriers, service providers, contractors and other public or private organisations who perform measurements during equipment upgrades or during commissioning, acceptance testing and routine maintenance on cellular network equipment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – radio frequency networks

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to test cellular phone and network equipment	1.1 Obtain and follow relevant legislation, codes, regulations and standards 1.2 Scope work by obtaining work details from appropriate personnel and arrange for site access to comply with security

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	arrangements 1.3 Evaluate manufacturer's technical documentation and network procedures to plan test schedule for cellular network 1.4 Verify calibration of test equipment to ensure that tested cellular equipment is compliant 1.5 Prepare cellular equipment for testing according to manufacturer's test procedure 1.6 Notify operational staff of test and measurement schedule to ensure minimal impact on cellular network
2. Test and measure cellular phone and network equipment	2.1 Work safely following work health and safety (WHS) and environmental requirements for given work, identifying hazards and using personal protective equipment 2.2 Configure network equipment for testing and set options to record test results 2.3 Block or mask alarms that may be triggered and interfere with test program 2.4 Run performance measurement software with options set and record test results 2.5 Re-establish alarms and normal operational status at conclusion of tests, and notify appropriate personnel of completion of test schedule
3. Analyse measurement and prepare evaluation report	3.1 Analyse results of performance tests and measurements and determine performance level of cellular equipment and compatibility with network 3.2 Prepare evaluation report, making recommendations on network modifications or changes to configurations settings for improved quality of service 3.3 Present test results and evaluation report to appropriate personnel according to enterprise policy

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.3, 1.5, 3.3	• Recognises and interprets regulatory and technical information from relevant sources to determine all

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		specifications and frameworks
Writing	1.6, 2.4, 2.5, 3.2	• Uses clear, specific and industry related terminology to complete and update workplace documentation and when presenting information to work associates, supervisors, team members and clients
Oral Communication	1.2, 1.6, 2.5, 3.3	• Liaises with internal and external personnel about technical requirements using specific and relevant language • Uses listening and questioning techniques to confirm understanding
Numeracy	3.1	• Evaluates and interprets technical data and results according to predetermined specifications
Navigate the world of work	2.1	• Understands the nature and purpose of own role and associated responsibilities • Takes personal responsibility for adherence to legal and regulatory requirements, with specific reference to safety
Get the work done	1.1-1.5, 2.2-2.5, 3.1	• Determines job priorities and works logically and systematically to undertake clearly defined and familiar tasks • Understands the purposes and specific functions of common digital systems and uses them effectively to complete routine tasks • Takes responsibility for routine decision making by selecting from a range of predetermined options in routine situations, identifying and taking some situational factors into account • Diagnoses faults in different situations, adapts procedures and modifies activities depending on operational contingencies, risk situations and environments • Implements actions according to a predetermined plan, making slight adjustments if necessary and addressing some unexpected issues

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTRFN502 Test and measure cellular phone	ICTRFN5148A Test and measure cellular	Updated to meet Standards for	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
and network equipment performance	phone and network equipment performance	Training Packages	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTRFN502 Test and measure cellular phone and network equipment performance

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- plan and coordinate test activities and equipment
- test cellular phone and network equipment according to test procedure
- analyse test results
- report and make recommendations on performance.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- summarise the features and operating requirements of cellular test equipment, including the digital cellular test set, spectrum analyser and radio frequency (RF) power meter
- explain network components, their functions and approved specifications
- provide detailed information about transmission lines, transmitter and receiver architecture and associated cellular network
- provide detailed information about cellular antenna and feedlines, and their impact on mobile spectrum interference
- explain testing network components
- outline the types of adjustments that need to be made when measuring cellular transmission
- summarise the types of networks that will influence the transmission on the radio path and/or the transmission line.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications – radio frequency networks field of work and include access to:

- sites on which cellular network testing may be conducted
- test equipment currently used in industry
- manufacturer's and enterprise technical documentation
- relevant regulations and standards.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTRFN503 Evaluate and analyse radio frequency signal coverage plots

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to combine technical radio communications skills with organisational and administrative skills to generate and evaluate coverage maps in a range of commercial and community contexts for radio and television broadcasting, radio base station coverage, and point-to-point links.

It applies to individuals who are technically proficient and who work for regulatory authorities and private and public organisations. They may be responsible for small projects or parts of larger projects, and for the coordination and direction of small technical groups.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – radio frequency networks

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan and prepare for coverage	1.1 Prepare for given work according to relevant legislation, work health and safety (WHS), codes, regulations and standards

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prediction	1.2 Arrange access to site according to required procedure 1.3 Establish type of coverage required 1.4 Determine specifications and minimum acceptable signal level or timing signal delay within coverage area 1.5 Use prediction software specific to enterprise 1.6 Verify mapping coordinate system to be used 1.7 Create custom antenna pattern files representative of expected antenna type for type of coverage required
2. Load data into software program and create coverage plot	2.1 Select and load system parameters 2.2 Select and load antenna elements or antenna pattern files 2.3 Select suitable propagation model settings applicable to study 2.4 Load appropriate clutter properties 2.5 Create coverage plot using appropriate plot options settings
3. Analyse coverage plot outcomes	3.1 Evaluate initial coverage plot against initial specifications 3.2 Adjust system parameters and antenna elements until coverage plot is within specifications 3.3 Compare measured signal strength at various locations with predicted values 3.4 Use measured data to correct and fine tune model 3.5 Evaluate range of possible solutions and make appropriate recommendations to ensure transmission meets operational requirements
4. Complete documentation	4.1 Tabulate results 4.2 Prepare report with final recommendations

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.4	• Recognises and interprets regulatory and technical information from relevant sources to determine all specifications and frameworks

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Writing	3.5, 4.1, 4.2	• Uses clear, specific and industry related terminology to complete and update workplace documentation and when presenting recommendations to relevant personnel
Oral Communication	1.2, 1.6, 3.5	• Liaises with internal and external personnel about technical, operational and commercial matters using specific and relevant language • Uses listening and questioning techniques to confirm understanding
Numeracy	1.4, 3.3, 3.4	• Evaluates and interprets technical data to convert measurements and comprehend results
Navigate the world of work	1.1	• Takes personal responsibility for adherence to legal and regulatory requirements with specific reference to safety
Get the work done	1.2, 1.3, 1.5-1.7, 2.1-2.5, 3.1, 3.2, 3.5	• Determines job priorities and works logically and systematically to undertake clearly defined and familiar tasks • Understands the ways in which digital systems and tools are used and recognises all operational applications • Takes responsibility for routine decision making by selecting from a range of predetermined options in routine situations, identifying and taking situational factors into account • Diagnoses faults in different situations, adapts procedures and modifies activities depending on operational contingencies, risk situations and environments • Implements actions according to a predetermined plan, making slight adjustments if necessary and addressing some unexpected issues

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTRFN503 Evaluate and analyse radio frequency	ICTRFN5179A Evaluate and analyse radio frequency signal	Updated to meet Standards for	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
signal coverage plots	coverage plots	Training Packages	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTRFN503 Evaluate and analyse radio frequency signal coverage plots

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- plan and coordinate activities to produce coverage plots using appropriate software settings
- generate:
  - a radio frequency (RF) signal coverage plot
  - a path profile for a point-to-point link
- evaluate, analyse and make recommendations on antenna installation specifications.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain antenna and propagation theory
- explain antenna array theory
- summarise various mapping coordinate systems and their datums
- outline propagation models and their limitations in various environments
- outline specific issues related to antenna installations and the creation of particular radiation patterns.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications – radio frequency networks field of work and include access to:

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- a computer facility on which coverage plots and paths may be generated
- propagation prediction software
- a digital terrain database.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTRFN601 Monitor the capacity of and recommend changes to the cellular mobile network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to evaluate, analyse and make recommendations at the system design level on antenna installation specifications.

It applies to individuals working as technical officers and engineers who undertake mobile network performance measurements and report on mobile capacity enhancement to senior management.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – radio frequency networks

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Monitor capacity of cellular mobile network	1.1 Monitor traffic levels from network management system 1.2 Use approved enterprise plans to identify planned network growth 1.3 Obtain client forecast data from marketing 1.4 Apply identified data against capacity trigger criteria

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	1.5 Determine coverage and cell parameters
2. Make recommendations relating to capacity changes	2.1 Identify requirements for additional capacity 2.2 Recommend changes or additions to frequency parameters and submit to planning personnel 2.3 Assess capacity of transmission path, switch resources and recommend improvements, noting transmission medium 2.4 Manipulate traffic through switch parameter settings as a means of relieving traffic congestion 2.5 Determine cost of proposed changes and undertake studies of appropriate return on investment (RoI)
3. Assess capacity changes	3.1 Organise tests and studies to ensure that increased capacity adequately caters for traffic flow 3.2 Make recommendations for further change to network should increased capacity not meet need

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.2	• Recognises and interprets technical information from relevant sources to determine all specifications and frameworks
Writing	2.2, 2.3, 3.2	• Uses clear, specific and industry related terminology to complete and update workplace documentation and when presenting recommendations to relevant personnel
Oral Communication	3.2	• Liaises with internal and external personnel about technical and operational matters using specific and relevant language and listening • Uses questioning techniques to confirm understanding
Numeracy	1.4, 2.3, 2.5	• Undertakes mathematical calculations to project costs and calculate returns on investments • Uses advanced mathematics methods to manipulate complex numerical data
Get the work done	1.1, 1.3-1.5,	• Determines job priorities and works logically and

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	2.1, 2.3, 2.4, 3.1	systematically to undertake clearly defined and familiar tasks • Understands the ways in which digital systems and tools are used and recognises all operational applications • Takes responsibility for decision making by selecting from a range of predetermined options in routine situations, identifying and taking some situational factors into account • Diagnoses faults in different situations, adapts procedures and modifies activities depending on operational contingencies, risk situations and environments • Implements actions according to a predetermined plan, making slight adjustments if necessary and addressing some unexpected issues

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTRFN601 Monitor the capacity of and recommend changes to the cellular mobile network	ICTRFN6098B Monitor the capacity of and recommend changes to the cellular mobile network	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTRFN601 Monitor the capacity of and recommend changes to the cellular mobile network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- source and analyse relevant data to prepare a plan indicating growth potential and recommendations for meeting growth within timeframes
- use tools and software packages for forecasting and measurement
- identify site or channel capacity, relevant network growth and forecasting growth.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain blocking, non-blocking and grade of service
- explain Erlang B measurements
- summarise features and operating requirements of test equipment
- outline field measurements for cell traffic capacity
- explain the information required to:
  - analyse and interpret statistical data as applied to teletraffic measurement
  - prepare and conduct a capacity measurement
- summarise legislation, codes of practice and other formal agreements that directly impact on radio communications site transmission
- outline the following including:
  - transmission lines
  - transmitter and receiver architecture and their impact on radio communications traffic
- outline switching architecture with specific reference to space and time switching

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- outline the types of adjustments that need to be made to procedures to meet the requirements of particular sites and environmental conditions
- explain typical issues and challenges that occur in telecommunications cellular capacity design and how these may be addressed.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications – radio frequency networks field of work and include access to:

- sites with cellular mobile network
- capacity monitoring data and equipment.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTRFN602 Produce and evaluate architecture designs for WiMAX networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to specify the design of Worldwide Interoperability for Microwave Access (WiMAX) network architecture.

It applies to individuals working as information and communication technologies (ICT) technicians, designing and operating WiMAX networks in wireless core and access networks. Wireless convergence technology in telecommunications particularly applies to the deployment of fast wireless broadband access.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – radio frequency networks

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to produce architecture designs for	1.1 Review WiMAX specification 802.16 protocol structure for point-to-point (backhaul) and point-to-multipoint (end user) topologies, and identify requirements of network

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wireless broadband	1.2 Assess technical characteristics and functions of network elements in WiMAX network 1.3 Evaluate advantages of modulation techniques used in wireless access technologies 1.4 Compare characteristics and operating principles of multiplexing techniques used at physical layer of wireless access technologies
2. Design architectures for proposed fixed and mobile WiMAX network	2.1 Develop proposed network topology for fixed (802.16d) WiMAX network, showing relationship of network elements 2.2 Develop proposed network topology for mobile (802.16e) WiMAX network showing relationship of network elements 2.3 Evaluate design considerations between fixed and mobile WiMAX network and produce design specifications 2.4 Determine appropriate multiple-antenna system in WiMAX design by considering their benefits 2.5 Produce report on architecture design for WiMAX network
3. Evaluate network management products	3.1 Research, analyse and evaluate current network management products 3.2 Produce evaluation report on effectiveness of network management products that could be used to manage WiMAX network elements
4. Produce network designs for possible implementation	4.1 Compare WiMAX with other competing wireless technologies and their interoperability 4.2 Investigate inclusion of wireless fidelity (wi-fi) in the design architectures as complementary technology 4.3 Use latest technical specifications and pricing to evaluate range of architecture design solutions 4.4 Determine support and training requirements needed 4.5 Produce implementation document on WiMAX architecture configurations and designs, and present to appropriate person for approval

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description

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Reading	1.1, 3.1	• Recognises and analyses complex technical information to evaluate a broad range of features of current security issues and best practice in security, equipment and procedures
Writing	2.1-2.3, 2.5, 3.2, 4.3, 4.5	• Uses clear, specific and industry related terminology to complete and update workplace documentation and when presenting recommendations to relevant personnel
Oral Communication	4.3, 4.5	• Liaises with personnel about technical, operational and commercial matters using specific and relevant language • Uses listening and questioning techniques to confirm understanding
Numeracy	4.3	• Performs mathematical calculations to analyse pricing data and statistics
Get the work done	1.2-1.4, 2.4, 4.1 4.2	• Determines job priorities and works logically and systematically to undertake clearly defined and familiar tasks • Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world and understands the potential of new technology • Uses systematic, analytical processes in complex situations, gathering relevant information and identifying and evaluating options against predetermined criteria • Diagnoses faults in different situations, adapts procedures and modifies activities depending on operational contingencies, risk situations and environments • Responds intuitively to problems requiring immediate resolution, drawing on past experiences to focus on the cause of a problem rather than the symptom

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTRFN602 Produce and evaluate architecture designs for WiMAX	ICTRFN6171A Produce and evaluate architecture designs	Updated to meet Standards for Training Packages	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
networks	for WiMAX networks		

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTRFN602 Produce and evaluate architecture designs for WiMAX networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- review and assess the Worldwide Interoperability for Microwave Access (WiMAX) communication architecture, hardware, protocols and networking systems for a new design
- integrate other wireless technologies
- analyse and evaluate competing wireless technologies
- design viable WiMAX network solutions
- assess network performance.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline the client business domain
- explain current industry accepted network hardware and software products and their general features and capabilities
- explain the design implications of the following:
  - current industry accepted WiMAX network protocols
  - remote user issues
  - management systems
  - WiMAX network design
  - WiMAX network traffic evaluation
- explain current industry security products, devices and procedures and their general features and capabilities

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- outline theoretical concepts of current industry network development and design methodologies.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications – radio frequency networks field of work and include access to:

- IEEE 802.16 standards for WiMAX
- client requirements
- technical specifications
- expected traffic volume
- vendors and vendor offerings and pricing
- information on a range of IT business solutions
- future organisational business processes
- a budget for architecture designs for WiMAX networks.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTRFN801 Produce a radio link budget

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to analyse technical performance of fixed and mobile radio systems, and plan and calculate link budgets.

It applies to individuals working as telecommunications engineers who take responsibility for establishing layout of a digital radio system to minimise transmission loss and optimise system performance.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Radio Frequency Networks

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Critically analyse suitability of radio systems	1.1 Critically analyse spectral efficiency of functional elements of mobile radio systems for determining optimal frequency utilisation 1.2 Critically analyse features of radio systems to evaluate effectiveness of a particular application 1.3 Compare features and specifications of antennas used in radio systems to assist with radio link budget 1.4 Report on suitability of radio systems, including

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ELEMENT	PERFORMANCE CRITERIA
	recommendations to improve network performance
2. Calculate a radio link budget	2.1 Calculate path loss using variables in appropriate propagation models for a power link budget 2.2 Evaluate power link budget against allowable power margin specifications 2.3 Evaluate modulation types and spectral efficiency 2.4 Confirm radio power link budget achieves specified reliability
3. Complete evaluation and planning documentations	3.1 Complete an evaluation report on performance of radio systems with recommendations on system improvements 3.2 Document processes used to determine optimal power link budget for a radio system

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Writing	1.4, 3.1, 3.2	• Uses clear, specific and industry-related terminology to complete and update specific workplace documentation and when presenting recommendations to relevant personnel
Oral Communication	1.4	• Liaises with personnel about technical, operational and commercial matters using specific and relevant language, using listening and questioning techniques to confirm understanding
Numeracy	2.1, 2.2, 2.4	• Analyses, synthesises and performs calculations using highly embedded mathematical information in a broad range of tasks and texts
Get the work done	1.1-1.3, 2.1-2.3	• Determines job priorities and works logically and systematically to undertake clearly defined and familiar tasks • Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world and understands potential of new technology • Uses systematic, analytical processes in complex

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		situations, gathering relevant information and identifying and evaluating options against predetermined criteria • Diagnoses faults in different situations, adapts procedures and modifies activities depending on operational contingencies, risk situations and environments

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTRFN801 Produce a radio link budget	ICTRFN7182B Produce a radio link budget	Updated to meet Standards for Training Packages. Recoded and minor changes to PC's to meet AQF requirements.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTRFN801 Produce a radio link budget

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- analyse signal degradation characteristics of radio paths and calculate power budgets for various distances and antenna heights versus transmitted power
- research constraints imposed by mobile phone frequency allocations and simulate carrier to interference radiation patterns around a cell site
- create evaluation report on radio system performance
- document processes used to determine power link budget.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain high frequency (HF), very high frequency (VHF), ultra high frequency (UHF) and microwave receiving techniques
- summarise modulation methods:
  - AM
  - FM
  - digital
- outline multiplexing systems
- summarise operation of transmitters and receivers
- explain organisational policies and procedures
- summarise personal safety issues
- explain propagation methods
- summarise radio communications systems
- weigh factors affecting radio frequency (RF) path loss

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- summarise RF technologies.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the Telecommunications – Radio Frequency Networks industry and include access to:

- a telecommunications operations site
- mobile telephony devices and equipment
- networked computers and relevant software.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTRFN802 Analyse a cellular mobile network system

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to study the detailed architecture and operation of individual cellular mobile elements and develop a plan to integrate emerging cellular technologies.

It applies to individuals working as telecommunications engineers or senior technical officers as they prepare to upgrade to next generation mobile networks.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – radio frequency networks

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Research mobile network systems and interfaces to interconnected networks	1.1 Analyse interfaces between cellular mobile network and clients, including public switched telephone network (PSTN) and internet to validate interoperability of individual systems 1.2 Research latest generation of mobile radio systems and develop plan for integration of emerging cellular technologies to meet future

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	demands and client expectations
2. Analyse constraints imposed by frequency spectrum allocations	2.1 Analyse techniques to increase system capacity for fixed spectrum bandwidth 2.2 Plan frequency allocation for cellular network from derived specifications 2.3 Develop simulation that plots carrier to interference radiation pattern for given cell geometry in reflective environment
3. Analyse operations of major subsystems of cellular network	3.1 Evaluate major subsystem functions of cellular network and analyse subsystem components to determine capability for upgrades 3.2 Research and report how major subsystems interface to other network subsystems 3.3 Simulate transmission path for cellular network
4. Analyse system capability	4.1 Simulate traffic flow measurements in microcellular environment 4.2 Produce analytical report on cellular mobile convergence with plan for cellular mobile system integration to existing networks

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.2, 3.2	• Interprets complex technical information in a variety of forms and applies the knowledge gained to evaluate different types of technical data and compare with theoretical values and approved specifications
Writing	1.2, 3.2, 4.2	• Uses clear, specific and industry related terminology to complete and update specific workplace documentation and when presenting recommendations to relevant personnel
Oral Communication	3.2	• Liaises with personnel about technical and operational issues using specific and relevant language • Uses listening and questioning techniques to confirm understanding
Numeracy	2.2, 3.3, 4.1	• Interprets the results of complex numerical measurements

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Get the work done	1.1, 2.1-2.3, 3.1, 3.3, 4.1	• Operates from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation, and identifying and addressing issues as the work progresses • Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world and understands the potential of new technology • Uses systematic, analytical processes in complex situations, gathering relevant information and identifying and evaluating options against predetermined criteria • Undertakes testing procedures in different situations, adapts procedures and modifies activities depending on operational contingencies, risk situations and environments • Uses digital technologies to manage business operations and actively investigates new technologies for strategic and operational purposes

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTRFN802 Analyse a cellular mobile network system	ICTRFN8180B Analyse a cellular mobile network system	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTRFN802 Analyse a cellular mobile network system

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- plan a frequency allocation for a cellular network
- analyse techniques to increase system capacity for a fixed spectrum bandwidth
- develop a plan for integration of emerging cellular technologies
- analyse the interfaces between a mobile network and clients
- research and report the interfacing of major subsystems to other network subsystems
- produce an analytical report on cellular mobile convergence with a plan for cellular mobile system integration to existing networks.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- evaluate allocations and bandwidth requirements of cellular systems
- investigate efficiency and system capacity given the spectrum allocation, number of channels required and grade of service
- describe equipment subsystem diagnosis and repair procedures
- summarise features and differences between major frequency bands and their allocation of licences
- compare features and operating requirements of cellular test equipment
- outline key features of cellular mobile radio systems
- summarise major element functions of a mobile radio system
- explain major frequency bands and their allocation of licences
- describe a microcellular system
- explain minimising latency

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- outline network components and their functions
- provide a detailed summary of transmission lines, transmitter and receiver architecture
- summarise radio spectrum in use, specifying restrictions and characteristics
- describe radio frequency (RF) and electromagnetic energy (EME) hazards
- investigate and evaluate antenna performance and mobile components, and their impact on mobile spectrum interference
- explain spectrum efficiency
- describe system configuration procedures
- outline testing network components
- summarise the types of adjustments that need to be made when measuring cellular transmission
- outline the types of networks that will influence the transmission on the radio path and/or transmission line.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications – radio frequency networks field of work and include access to:

- sites on which cellular network analysis, research and simulation may be conducted
- test equipment currently used in industry
- manufacturer's and enterprise technical documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTRFN803 Analyse a satellite communications system

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required for a new installation project, an upgrade of capacity or technology in an existing network or as a result of convergence to next generation networks (NGN).

It applies to individuals working as supervisors and engineers, who plan, design and implement satellite communications systems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – radio frequency networks

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Research satellite communication systems	1.1 Research satellite applications with various orbit types for assessing their spatial positioning for specific purposes 1.2 Analyse and report on architecture, major subsystems and critical components in communication systems of recently launched commercial satellite

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	1.3 Research and report on multiple access techniques and their typical applications
2. Analyse uplink and downlink variables	2.1 Determine uplink and downlink criteria that impact on carrier to noise ratio 2.2 Determine up/down link criteria that impact on baseband signal to noise ratio 2.3 Determine critical parameters of a satellite system 2.4 Research common types of baseband signal processing, and their spectral and noise improvement parameters for determining criteria for link budget evaluations
3. Conduct link budget analysis	3.1 Produce satellite link budget and calculate link margin for satellite system with specified modulation types 3.2 Analyse relationship between bit error ratio (BER) for given energy per bit per noise power density (Eb/No) and forward error correction (FEC) parameter for determining operational performance of link
4. Analyse properties of geostationary satellites	4.1 Calculate look angles for geostationary satellite from any receiving location 4.2 Research and report on frequency re-use in conjunction with polarisation selection and use of spot beams 4.3 Analyse and specify major features of very small aperture terminal (VSAT) systems, and calculate link reliability in high rainfall regions

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1-1.3, 2.4, 4.2	• Interprets complex technical information in a variety of forms and applies the knowledge gained to solve complex problems by making informed judgements and assumptions
Writing	1.2, 1.3, 3.1, 4.2	• Uses clear, specific and industry related terminology to prepare detailed reports containing recommendations for relevant personnel

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Numeracy	2.4, 3.1, 3.2, 4.1, 4.3	• Uses and applies knowledge about space and shape, including angle properties, when analysing variables • Determines link budgets by selecting antennae size, power requirements, link availability and bit error rate (BER) by solving complex mathematical formulas
Get the work done	1.2, 2.1-2.3, 3.1, 3.2, 4.1, 4.3	• Gathers and analyses data and seeks feedback to improve plans and processes • Makes high impact decisions in a complex and diverse environment, using input from a range of sources • Identifies key factors that impact on decisions and their outcomes, drawing on experience, competing priorities and decision making strategies where appropriate • Operates from a broad conceptual plan, developing the operational detail in stages, regularly reviewing priorities and performance during implementation, and identifying and addressing issues as the work progresses • Addresses complex problems involving multiple variables, using formal analytical, lateral thinking techniques, experience and knowledge to focus on the root cause • Takes responsibility for high impact decisions in complex situations involving many variables and constraints

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTRFN803 Analyse a satellite communications system	ICTRFN8181B Analyse a satellite communications system	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTRFN803 Analyse a satellite communications system

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- analyse satellite communications system architecture
- produce a satellite link budget and calculate link margin for a range of digital modulation types
- calculate the look angles for a geostationary satellite from any receiving location
- analyse and specify the major features of very small aperture terminal (VSAT) systems.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify and perform antenna calculations including:
  - gain
  - beamwidth
  - polarisation
  - effective isotropic radiated power (EIRP)
- define bit error rate (BER) and how it affects satellite communications
- outline carrier and noise ratio
- explain constellation and eye diagrams
- outline distance to satellite and typical delays
- summarise frequency spectrum (satellite bands)
- explain gain-to-noise-temperature G/T ratio
- outline geostationary orbit
- explain link budget calculation

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- explain look angle calculations
- describe low earth orbiting (LEO) satellites
- evaluate the following modulation types suitable for satellite communications:
  - n-FSK:
    - 2FSK
    - 4FSK
  - n-PSK:
    - 2PSK
    - 4PSK
    - 8PSK
    - 16PSK
  - n-QAM:
    - 16 QAM
    - 256QAM
- define spread spectrum techniques including:
  - direct sequence
  - frequency hopping.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications – radio frequency networks field of work and include access to:

- a site on which satellite analysis may be conducted
- data, calculators and appropriate software tools.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAD501 Model data objects

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to understand business operations, identify entities and data, diagrammatically represent their relationships, and prepare a data model.

It applies individuals who have a broad range of analytical, technical and communication skills and who work within broad but established parameters.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems analysis and design

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify entities and relationships	1.1 Analyse business data to understand operations 1.2 Identify boundaries of the system 1.3 Identify entities, attributes, data types and relationships of data 1.4 Review business rules to determine impact 1.5 Document relationships in an entity relationship diagram

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ELEMENT	PERFORMANCE CRITERIA
2. Develop normalisation	2.1 Identify suitable business data 2.2 Undertake normalisation of business data and document results 2.3 Compare normalisation results with entity relationship diagram 2.4 Reconcile differences between data
3. Validate model	3.1 Validate data model with client 3.2 Resolve issues or recommendations 3.3 Document completed data model 3.4 Submit to client for final approval

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.4, 2.3, 2.4	• Critically analyses complex documentation from a variety of sources and consolidates information relating to specific criteria to determine requirements
Writing	1.5, 2.2, 2.4, 3.3, 3.4	• Prepares and produces diagrammatic models and associated documents that convey complex relationships between data • Documents outcomes and changes to discussions, using industry relevant terminology and recognised symbols
Oral Communication	3.1-3.4	• Participates in verbal exchanges by listening and questioning clients to elicit information, resolve issues, and obtain final product and work outcome approval
Interact with others	3.1, 3.2, 3.4	• Selects, implements and seeks to improve protocols governing communications to clients and co-workers in a range of work contexts • Elicits feedback and provides feedback to others
Get the work done	1.1-1.4, 2.1, 3.2, 3.3	• Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others and taking into account capabilities, efficiencies and effectiveness • Applies systematic and analytical decision making

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		processes for complex and non-routine situations • Uses and investigates new digital technologies and applications to manage and manipulate data and communicate effectively with others, in a secure and stable digital environment

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTSAD501 Model data objects	ICASAD501A Model data objects	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAD501 Model data objects

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- document client business requirements
- construct an entity relationship diagram
- construct and document a data model
- normalise the model
- validate the model.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- fully describe:
  - database identifiers and their impact on database usability
  - normalisation rules and processes
  - type hierarchies, including sub-types, super-types and root-types related to development of structured data types
  - validation procedures and processes
- describe the function and features of:
  - an approach to data modelling, such as the entity-relationship model
  - keys, e.g. unique keys, composite keys, primary keys and primary index
  - time stamps related to the use of keys
  - user defined types, structured types, reference types and user defined functions
  - data types and their application
- summarise the particular business domain.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the systems analysis and design field of work, and include access to:

- client's business requirements
- special purpose tools, equipment and materials
- industry software packages
- computer aided software engineering (CASE) tools
- entity relationship diagrams.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAD502 Model data processes

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to gather process data and business information in order to model data processes within an organisation.

It applies to individuals who can apply a broad range of technical knowledge and skills within the context of a complex project.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems analysis and design

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Develop scope of model	1.1 Identify relevant data processes and sources of information 1.2 Identify information gathering method and modelling methodology to be used 1.3 Document modelling information gathered 1.4 Validate modelling information with client
2. Gather process data	2.1 Identify business functions and collect process data using chosen method

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Identify external events, procedures and results 2.3 Identify processes and required decomposition
3. Develop and validate data model	3.1 Model process data according to modelling methodology 3.2 Validate process model with client to determine inaccuracies 3.3 Incorporate identified changes, as required 3.4 Review business rules to determine impact on process models and change as required 3.5 Validate completed process models with client

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 2.1, 2.3, 3.4	• Critically analyses complex documentation from a variety of sources and consolidates information relating to specific criteria to determine requirements
Writing	1.3, 1.4, 3.3-3.5	• Prepares and produces diagrammatic models and associated documents that convey complex relationships between data
Oral Communication	1.4, 3.2, 3.5	• Determines and confirms client requirements using collaborative and inclusive techniques, including active listening and questioning, and reading of verbal and non-verbal signals to convey and clarify information and confirm understanding
Interact with others	1.4, 3.2, 3.5	• Implements strategies for a diverse range of colleagues and clients to build rapport and foster strong relationships
Get the work done	1.1, 1.2, 2.1-2.3, 3.1, 3.4	• Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others and taking into account capabilities, efficiencies and effectiveness • Applies systematic and analytical decision making processes for complex and non-routine situations • Uses and investigates new digital technologies and applications to manage and manipulate data, and

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		communicate effectively with others in a secure and stable digital environment

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTSAD502 Model data processes	ICASAD502A Model data processes	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAD502 Model data processes

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- identify data processes that represent the client's business reality
- model data processes according to industry and organisation standards
- complete documentation of the data model.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- discuss modelling rules and conventions with reference to naming processes and events
- outline features and functions of process mappers
- explain features of data analysis, particularly in determining process flows
- describe processes and techniques, using logical design concepts related to designing process models.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the systems analysis and design field of work, and include access to:

- client’s business requirements
- special purpose tools and equipment
- industry software packages.

Assessors must satisfy NVR/AQTF assessor requirements.

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Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAD503 Minimise risk of new technologies to business solutions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to identify and plan to minimise the business and technological risks associated with business solutions that utilise new technologies.

It applies to individuals who are responsible for performing complex technical analysis to provide solutions to complex problems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems analysis and design

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish the risk context	1.1 Review organisational and technical environment and proposed business solution 1.2 Identify scale, importance and complexity of project risks 1.3 Establish acceptable and unacceptable levels of risk and consequences for the solution

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Identify the impact of risks against the business environment 1.5 Determine and document proposed actions to insure against identified generic risks
2. Conduct risk analysis	2.1 Conduct a risk analysis to determine the likelihood of risks identified 2.2 Rank risk factors according to the impact and likelihood of occurrence 2.3 Develop contingency plans to mitigate identified risks 2.4 Document risk analysis and contingencies in a risk management plan 2.5 Implement risk management plans and undertake awareness training to inform stakeholders
3. Monitor risks	3.1 Establish feedback channels to warn of unforeseen and identified risks 3.2 Conduct regular reviews to identify new risks and update established risks 3.3 Document changes to risk management plans as appropriate

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 2.1, 3.2	• Critically analyses complex documentation from a variety of sources and consolidates information relating to specific criteria to determine requirements
Writing	1.5, 2.1, 2.3, 2.4, 3.3	• Prepares documentation that expresses ideas, explores complex issues and is constructed logically, succinctly and accurately
Navigate the world of work	1.4	• Seeks to improve policies and procedures to better meet organisational goals and mitigate risk
Interact with others	2.5, 3.1, 3.2	• Selects, implements and seeks to improve protocols governing communications to clients and co-workers in a range of work contexts

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		• Elicits feedback and provides feedback to others
Get the work done	1.2-1.5, 2.1-2.5	• Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others and taking into account capabilities, efficiencies and effectiveness • Applies systematic and analytical decision making processes for complex and non-routine situations • Investigates new and innovative ideas as a means to continuously improve work practices and processes through consultation, and formal and analytical thinking • Uses and investigates new digital technologies and applications to manage and manipulate data and communicate effectively with others, in a secure and stable digital environment

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTSAD503 Minimise risk of new technologies to business solutions	ICASAD503A Minimise risk of new technologies to business solutions	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAD503 Minimise risk of new technologies to business solutions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- develop procedures that identify where risk occurs
- identify measures to be taken to treat the risk
- document a risk management plan
- implement risk management plan
- establish a risk review procedure.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline business process design
- explain business supply chain
- describe copyright and intellectual property relating to new technologies
- identify and describe how business sites fit into corporate strategy
- explain the purpose of user analysis and customer relationship management software
- describe risk management process and planning strategies.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the systems analysis and design field of work, and include access to:

- analysis software

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- business website
- customer relationship model
- requirements documentation
- site server and software
- updated or new technology
- user analysis
- web servers.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAD506 Produce a feasibility report

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to recommend the preferred scenario from a range of feasible options offered to the client.

It applies to individuals who are responsible for researching, planning and designing solutions for complex information and communications technology (ICT) projects.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems analysis and design

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Confirm client requirements	1.1 Confirm client requirements to determine project scope and the problem context or opportunity faced by the business 1.2 Review documented client requirements, project scope, related problems and sources of information 1.3 Confirm requirements and scope with the client
2. Examine and review alternatives	2.1 Ensure that future client requirements are considered 2.2 Research and document feasible solutions for client

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ELEMENT	PERFORMANCE CRITERIA
	requirements 2.3 Ensure that the feasibility of each solution has been assessed, including constraints
3. Prepare and publish feasibility report	3.1 Prepare a feasibility report 3.2 Ensure that the completed feasibility report covers client requirements, project scope and analysis of alternative scenarios 3.3 Confirm the recommendation of the preferred scenario 3.4 Present feasibility report to appropriate person for project approval

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 2.2, 3.2	• Critically analyses complex documentation from a variety of sources and consolidates information relating to specific criteria to determine requirements
Writing	2.2, 3.1	• Writes, edits and proofreads reports to ensure clarity of meaning, and accuracy and consistency of information • Accurately records and completes organisational documents and correspondence using clear language and correct spelling, grammar and terminology
Oral Communication	1.1, 1.3, 3.3, 3.4	• Uses collaborative and inclusive techniques, including active listening and questioning, and reading of verbal and non-verbal signals to convey and clarify information and to confirm understanding
Interact with others	1.1, 1.3, 2.1, 3.4	• Selects, implements and seeks to improve protocols governing communications to clients and co-workers in a range of work contexts • Elicits feedback and provides feedback to others • Recognises the diversity in people and manages this diversity to improve workplace relations and practices
Get the work done	2.1-2.3, 3.1-3.3	• Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others and taking into account capabilities, efficiencies and effectiveness

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		• Monitors progress of plans and schedules, and reviews and changes them to meet new demands and priorities • Investigates new and innovative ideas as a means to continuously improve work practices and processes through consultation, and formal and analytical thinking

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTSAD506 Produce a feasibility report	ICASAD506A Produce a feasibility report	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAD506 Produce a feasibility report

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- review documentation and confirm client requirements for the project
- confirm the scope with the client
- document alternative solutions for the project
- prepare a feasibility report ensuring it meets client requirements.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe the client business domain and list the client requirements
- describe the role of stakeholders and the degree of stakeholder involvement in developing a feasibility report
- list the system's current functionality and improvement options
- outline TWO or more current industry systems development methodologies.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the systems analysis and design field of work, and include access to:

- contributions to a feasibility report
- client requirements
- report writing template
- client expectations brief

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- information on a range of information and communications technology (ICT) business solutions
- future organisational business processes
- budgets for scenarios
- outcomes of the business analysis process
- financial modelling
- business context
- use of special purpose tools, equipment, materials and industry software packages.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAD602 Conduct knowledge audits

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to conduct a knowledge management audit.

It applies to individuals in senior management positions who are responsible for high-level analysis of organisational strategies and practices.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems analysis and design

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Conduct a knowledge needs analysis	1.1 Identify current and future directions of the business 1.2 Identify knowledge and skills required to support the current business activities 1.3 Identify knowledge and skills required to support future business directions
2. Analyse the knowledge inventory	2.1 Produce knowledge questionnaires to request information from staff about corporate knowledge

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Identify explicit knowledge currently resident in data sources, such as policies, procedures, databases and libraries, and record its location 2.3 Identify the accessibility, aim and integrity of the knowledge 2.4 Identify the frequency of update of this knowledge, its previous versions, and its backup status 2.5 Identify implicit knowledge currently resident in informal sources and organisational knowledge
3. Chart the knowledge flow	3.1 Examine how knowledge flows from one data store to another within the organisation, and how this flow is facilitated or impeded by policies, such as access control or records management policies 3.2 Examine the procedures that facilitate the flow of knowledge within the organisation and their ease of use 3.3 Identify the corporate and individual attitudes to knowledge within the organisation
4. Produce a knowledge audit report	4.1 Analyse the results of the knowledge audit 4.2 Document findings and present to the appropriate person

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	2.2, 2.4, 2.5, 3.2, 4.1	• Critically analyses complex documentation from a variety of sources and consolidates information relating to specific criteria to determine requirements
Writing	2.1, 4.2	• Writes, edits and proofreads documents to ensure clarity of meaning, and accuracy and consistency of information • Prepares documentation that expresses ideas, explores complex issues, and is constructed logically, succinctly and accurately
Navigate the world of work	2.2, 3.1-3.3	• Takes a lead role in the development of organisational goals, roles and responsibilities • Develops and implements strategies that ensure organisational policies, procedures and regulatory requirements are met

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		• Monitors and reviews the organisation's policies, procedures and adherence to legislative requirements in order to implement and manage change
Interact with others	3.3, 4.2	• Selects, implements and manipulates communications systems, processes and practices for maximum impact • Develops and implements communications strategies with internal and external persons in order to build rapport • Influences and fosters a collaborative culture, facilitating a sense of commitment and workplace cohesion
Get the work done	1.1-1.3, 2.3-2.5, 3.1, 3.3, 4.1	• Plans strategic priorities and outcomes within a flexible, efficient and effective context, in a diverse environment exposed to competing demands • Gathers and analyses data and seeks feedback to improve plans and processes • Makes high-impact decisions in a complex and diverse environment, using input from a range of sources • Explores and incubates new and innovative ideas through unconstrained analysis and critical thinking to develop and improve the organisation's goals

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTSAD602 Conduct knowledge audits	ICASAD602A Conduct knowledge audits	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAD602 Conduct knowledge audits

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- document the identified explicit and implicit knowledge in an organisation
- establish and record the knowledge required to meet current needs
- establish and record the forecast knowledge required to meet future needs.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain how the organisation’s business, policies, procedures and structure influence corporate knowledge
- describe the difference between implicit and explicit knowledge
- analyse and identify concepts of risk management planning and processes
- explain the requirements for the design and development of questionnaires and the procedures for analysis of completed questionnaires
- explain the reporting mechanisms that influence a knowledge audit
- describe the key tools and models of project management.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the systems analysis and design field of work, and include access to:

- an organisation
- data sources and staff

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- relevant tools, equipment and materials
- relevant industry software.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAD604 Manage and communicate ICT solutions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to manage and communicate requirements for new information and communications technology (ICT) systems to a broad and diverse audience.

This unit applies to individuals who require high-level management, business and technical skills to manage complex analysis within the information and communications technology (ICT) industry, often as part of business critical ICT projects.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems analysis and design

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Manage identified client ICT requirements and scope of solution	1.1 Establish baseline client ICT requirements and change control processes to track changes to requirements and solution scope 1.2 Resolve issues and conflicts that emerge during final stages of identifying and analysing requirements 1.3 Determine how requirements will be presented for review 1.4 Secure approval of requirements from those stakeholders who

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ELEMENT	PERFORMANCE CRITERIA
	have the appropriate authority
2. Manage requirement relationships and dependencies	2.1 Examine and organise the set of requirements and record the dependencies and relationships for each 2.2 Perform impact analysis to assess or evaluate the impact of a change 2.3 Deploy requirements management tools as necessary
3. Maintain requirements for re-use	3.1 Identify requirements that the organisation will use in the long term 3.2 Name and define requirements available for future re-use
4. Prepare requirements package	4.1 Decide which formats are appropriate for a particular project and its stakeholders 4.2 Prepare requirements package according to organisational need

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 2.1, 2.2	• Critically analyses complex documentation from a variety of sources and consolidates information relating to specific criteria to determine requirements
Writing	1.4, 2.1, 3.2, 4.2, 5.1, 5.2	• Writes, edits and proofreads documents to ensure clarity of meaning, and accuracy and consistency of information • Prepares documentation and correspondence using clear language, correct spelling and terminology, and ensuring accuracy of information
Oral Communication	1.4, 5.1, 5.2	• Uses collaborative and inclusive techniques, including active listening and questioning, and reading of verbal and non-verbal signals to convey and clarify information and to confirm understanding
Navigate the world of work	4.2, 5.2	• Works autonomously, making high-level decisions to achieve and improve organisational goals • Develops and implements strategies that ensure organisational policies and procedures are being met

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Interact with others	1.2, 1.4, 5.1, 5.2	• Selects, implements and manipulates communications systems, processes and practices for maximum impact • Influences and fosters a collaborative culture, facilitating a sense of commitment and workplace cohesion • Shares knowledge, information and experience openly as an integral part of the working relationship • Recognises potential for conflict and, working with others, seeks to develop organisational processes to deal with conflict
Get the work done	1.1-1.3, 2.1-2.3, 3.1, 3.2, 4.1	• Plans strategic priorities and outcomes within a flexible, efficient and effective context, in a diverse environment exposed to competing demands • Gathers and analyses data and seeks feedback to improve plans and processes • Identifies key factors that impact on decisions and their outcomes, drawing on experience, competing priorities, and decision making strategies where appropriate • Explores and incubates new and innovative ideas through unconstrained analysis and critical thinking to develop and improve the organisation's goals

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTSAD604 Manage and communicate ICT solutions	ICASAD604A Manage and communicate IT solutions	Updated to meet Standards for Training Packages. Minor edit to competency title.	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAD604 Manage and communicate ICT solutions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- establish processes to:
  - trace requirements
  - control and track changes to requirements
  - scope solutions
- manage requirement relationships
- package and communicate requirements according to what is appropriate for a project or stakeholder group.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain conflict resolution and issue management techniques to handle possible changes to solution scope
- outline requirements management and traceability processes
- list and apply techniques for managing version control and configuration.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the systems analysis and design field of work, and include access to:

- a simulated or workplace project in a medium-to-large enterprise

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- observation of the candidate carrying out business analysis work
- reports and plans prepared for the projects
- a portfolio of the project work to be undertaken.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAD605 Elicit ICT requirements

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the outcomes, skills and knowledge required to undertake and engage stakeholders in the key task of defining information and communications technology (ICT) requirements.

This unit applies to individuals required to ensure that requirements elicited are complete, clear, correct and consistent, and can serve as a solid foundation for the solution to the business needs.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems analysis and design

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for elicitation	1.1 Define the specific activities and the planned dates for a particular elicitation activity 1.2 Build a detailed schedule 1.3 Communicate the plan to affected parties
2. Conduct elicitation	2.1 Conduct elicitation activity

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ELEMENT	PERFORMANCE CRITERIA
activity	2.2 Monitor captured requirements against business objectives to prevent scope creep 2.3 Capture and document requirements attributes 2.4 Update process metrics as the basis for future planning
3. Document elicitation results	3.1 Record elicitation outcomes in the appropriate form 3.2 Present elicitation outcomes to stakeholders and obtain agreement
4. Confirm elicitation results	4.1 Review the documented outputs with the stakeholders 4.2 Confirm that own understanding reflects stakeholder intentions and preferences

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	2.3, 4.1	• Analyses and consolidates information and data from a range of sources against defined criteria and requirements, and checks for accuracy and completeness
Writing	1.1, 1.3, 2.3, 2.4, 3.1, 3.2	• Accurately records information and prepares correspondence and documentation using clear language and organisational formats and protocols • Records outcomes of discussions
Oral Communication	1.3, 2.1, 3.2, 4.1, 4.2	• Determines and confirms stakeholder requirements, using collaborative and inclusive techniques, including active listening and questioning, and reading of verbal and non-verbal signals to convey and clarify information and to confirm understanding
Interact with others	1.3, 2.1, 3.2, 4.2	• Selects, implements and manipulates communications systems, processes and practices for maximum impact • Develops and implements communications strategies with internal and external persons in order to build rapport
Get the work	1.1, 1.2, 2.2, 2.4, 4.2	• Plans strategic priorities and outcomes within a flexible, efficient and effective context, in a diverse

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done		environment exposed to competing demands • Gathers and analyses data and seeks feedback to improve processes • Explores and incubates new and innovative ideas through unconstrained analysis and critical thinking to develop and improve the organisation's goals

Unit Mapping Information

Code and title **current version**	**Code and title** **previous version**	**Comments**	**Equivalence status**
ICTSAD605 Elicit ICT requirements	ICASAD605A Elicit IT requirements	Updated to meet Standards for Training Packages. Minor edit to the competency title.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAD605 Elicit ICT requirements

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- construct and implement requirements for elicitation activities
- select and apply elicitation techniques that are appropriate to the situation
- document requirements and obtain stakeholder sign-off.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain conflict resolution and issue management techniques
- provide an overview of negotiation and consensus strategies
- summarise techniques to elicit and manage the gathering of requirements
- formulate risk management strategies with regard to requirements gathering, staff management and proposed systems
- outline scope management and change control processes
- describe version control and configuration management approaches.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the systems analysis and design field of work, and include access to:

- appropriate policies
- current business analysis tools
- appropriate legislation

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- reports and plans prepared for the projects
- a portfolio of the project work to be undertaken.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS201 Maintain inventories for equipment, software and documentation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to record and store details of software, hardware and technical documentation.

It applies to frontline technical support personnel who maintain equipment, software and related technical documentation in a small to large office environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Document and update inventory	1.1 Maintain hardware inventory that creates a profile or description of each piece of equipment 1.2 Maintain software inventory and update licences as required, particularly when upgrading software 1.3 Record and organise storage of user documentation or technical manuals

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ELEMENT	PERFORMANCE CRITERIA
2. Store technical documentation	2.1 Store hardware, software and equipment that is not in use, according to technical manuals 2.2 Ensure technical documentation is stored securely 2.3 Access and disseminate technical documentation as required

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 1.3, 2.2, 2.3	• Accesses and interprets textual information from a range of sources to record, manage and maintain information
Writing	1.1, 1.2, 1.3, 2,2	• Records organisation, software and client technical information, and sequences writing to produce cohesive text for reference
Oral Communication	1.3, 2.1	• Participates in verbal exchanges of basic ideas that elicit views, opinions and feedback from others
Navigate the world of work	1.2-1.3, 2.1-2.3	• Understands roles and responsibilities for task and makes basic decisions on work completion parameters
Get the work done	1.1-1.3, 2.1-2.3	• Plans and implements routine tasks and workload, making limited decisions on sequencing, timing and collaboration, and seeking assistance in setting priorities • Understands the purposes, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine tasks

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status

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Code and title current version	Code and title previous version	Comments	Equivalence status
ICTSAS201 Maintain inventories for equipment, software and documentation	ICASAS201A Maintain inventories for equipment, software and documentation	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS201 Maintain inventories for equipment, software and documentation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- update and maintain software, equipment and technical documentation inventory, according to identified storage and retrieval policy and procedures
- comply with software licensing requirements, according to vendor specifications
- access and update inventories.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify and describe technical documentation processes
- describe common software licensing requirements
- describe inventory principles and procedures
- explain current industry practices related to storage of hardware, software and technical documentation.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the systems administration and support field of work and include access to:

- personal computer, equipment and materials
- industry and inventory management software packages
- organisational documentation
- enterprise intranet.

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Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS202 Apply problem-solving techniques to routine ICT malfunctions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to apply problem-solving techniques to determine the origin of a routine malfunction and plan for its resolution.

It applies to individuals who work under supervision to provide frontline technical support, diagnose technical problems and determine potential solutions. These are key components of this support role.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify routine problems	1.1 Identify hardware, software, user or procedural problem areas to appropriate person in the organisation 1.2 Define and determine problem to be investigated 1.3 Identify and document current conditions of the hardware, software, user or problem

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ELEMENT	PERFORMANCE CRITERIA
2. Research solutions to routine problems	2.1 Identify potential solutions to problem 2.2 Develop, document, rank and present recommendations about possible solutions to appropriate person for decision
3. Recommend solutions to problems	3.1 Plan implementation of solutions 3.2 Plan evaluation of implemented solutions 3.3 Document recommended solution and submit to appropriate person for confirmation

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.3, 2.1-2.2, 3.1-3.3	• Interprets familiar textual information from a range of sources to identify misleading information, compare technical specifications, and identify solutions to new and emerging issues
Writing	1.3, 2.2, 3.3	• Develops materials and resources using simple vocabulary to record information in a sequential manner for client engagement as well as internal reference
Oral Communication	1.1, 2.2	• Participates in verbal exchanges of familiar ideas using questioning and active listening to elicit information and feedback from others
Navigate the world of work	1.1- 1.3, 2.1, 2.2, 3.1-3.3	• Understands roles and responsibilities for task and makes basic decisions on work completion parameters
Interact with others	1.3, 2.2	• Identifies and takes steps to follow accepted communication practices and protocols
Get the work done	1.1-1.3, 2.1, 2.2, 3.1-3.3	• Plans and implements routine tasks, aiming to complete them efficiently • Initiates standard diagnostic procedures when responding to familiar and unfamiliar problems within immediate context, and seeks input from others when problems remain unresolved • Understands the purposes, specific functions and key

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		features of common digital systems and tools, and operates them effectively to complete routine tasks

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTSAS202 Apply problem-solving techniques to routine ICT malfunctions	ICASAS202A Apply problem-solving techniques to routine IT malfunctions	Updated to meet Standards for Training Packages. Minor edit to the competency title.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS202 Apply problem-solving techniques to routine ICT malfunctions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- determine the root cause of a routine malfunction
- identify solutions
- produce documentation that recommends solutions to problems
- follow established procedures
- refer unresolved problems to support persons.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify current industry hardware and software products and services
- identify current industry maintenance, service and helpdesk practices, processes and procedures
- identify current operating systems
- identify current industry standard diagnostic tools
- describe common computer malfunctions and resolutions.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the systems administration and support field of work and include access to:

- a workstation and industry software packages
- detailed information relating to organisational processes and procedures

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- information on a range of Information and Communications
- Technology (ICT) business solutions.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS203 Connect hardware peripherals

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to connect hardware peripherals according to instructions.

It applies to individuals employed in an information and communications technology (ICT) support role who are required to solve technical hardware and software incompatibility conflicts and problems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Confirm client requirements	1.1 Identify and confirm peripheral requirements of client according to organisational standards 1.2 Document client requirements and peripherals needed, and report findings to the appropriate person according to organisational standards 1.3 Verify client requirements with appropriate person according to organisational standards and reporting procedures

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Take action to ensure client support expectations are covered by vendor warranty and support services
2. Obtain required peripherals	2.1 Obtain peripherals under instruction from appropriate person 2.2 Enter details of peripherals into equipment inventory according to organisational standards 2.3 Validate that contents of delivered components and physical contents match the packing list and resolve discrepancies if necessary 2.4 Store peripherals according to vendors guidelines
3. Connect hardware peripherals	3.1 Verify timeframe for installation schedule with client 3.2 Remove old peripherals with minimal disruption to clients if they are to be replaced, taking into account environmental considerations and work health and safety (WHS) standards 3.3 Connect new peripherals with minimum disruption to clients, taking into account operating system procedures 3.4 Configure computer to accept new peripherals 3.5 Test hardware peripherals and confirm client satisfaction, paying particular attention to possible effect on other systems and making adjustments as required

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.4, 2.1-2.4, 3.1-3.5	• Interprets textual information from a range of sources to identify and adhere to requirements
Writing	1.2, 1.3, 1.4, 2.1	• Develops materials and resources using simple vocabulary to convey and record information and inventory, according to client and vendor requirements
Oral Communication	1.2, 1.3, 1.4, 2.1, 3.1, 3.5	• Participates in verbal exchanges of familiar ideas and information using questioning and active listening to elicit views, opinions and feedback from others
Navigate the	1.1, 1.3, 1.4, 2.1-2.4,	• Understands roles and responsibilities for task and makes basic decisions on work completion parameters

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world of work	3.2-3.5	in accordance with organisational requirements, WHS standards and environmental considerations
Interact with others	1.1-1.4, 2.1, 3.1	• Identifies and takes steps to follow accepted communication practices and protocols
Get the work done	1.1-1.4, 2.1-2.4, 3.1-3.5	• Plans and implements routine tasks, aiming to achieve them efficiently • Responds to predictable routine problems and implements standard or logical solutions • Understands the purposes, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine tasks

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTSAS203 Connect hardware peripherals	ICASAS203A Connect hardware peripherals	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS203 Connect hardware peripherals

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- connect several different types of hardware peripherals to the system safely and according to vendor instructions with a minimum of downtime, using known routines and procedures
- locate, interpret and use vendor documentation related to connection and storage of hardware peripherals
- test the operation of newly installed hardware peripherals and confirm client satisfaction
- follow work health and safety policies and procedures.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe the commonly used computer operating systems
- identify help desk and maintenance practices
- describe common peripheral devices
- summarise WHS procedures for electrical equipment
- list the system components and describe their interconnectivity
- identify current industry accepted hardware and software products
- describe procedures relevant to maintaining inventory
- list the organisational guidelines and standards that impact on service support including:
  - external suppliers and vendors
  - internal and external communications
  - internet access
  - security of information and data

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- identify common principles for environmentally sustainable business practices.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the systems administration and support field of work and include access to:

- sites with a representative range of workstations, hardware peripherals, internet connections and cabling
- software to be installed, interconnected and configured
- hardware and software currently used in industry
- technical documentation, including organisational hardware blueprint and vendor support.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS204 Record client support requirements

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to record, prioritise and escalate client support requests.

It applies to frontline technical support individuals who provide information and communications technology (ICT) client support in a small or large office environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Log requests for support	1.1 Record client support requests and requirements according to organisational standards 1.2 Review client support history and details 1.3 Check the information and request for accuracy and urgency according to organisational standards
2. Prioritise support requests with appropriate	2.1 Identify guidelines for prioritising or rating client requests 2.2 Prioritise client request based on its criticality or effect on

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ELEMENT	PERFORMANCE CRITERIA
personnel	business
3. Record support request	3.1 Document support request according to organisational requirements 3.2 Refer requests to appropriate person or department for assistance

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1- 1.3, 2.1, 2.2	• Interprets familiar textual information from a range of sources to identify and review practices and determine that appropriate standards have been maintained
Writing	1.1, 3.1, 3.2	• Develops materials and resources using simple vocabulary to accurately convey and record client information according to requirements and standards
Navigate the world of work	1.1-1.3, 2.1-2.2, 3.1-3.2	• Understands roles and responsibilities for task and makes basic decisions on work completion parameters in accordance with organisational standards
Interact with others	3.2	• Identifies and takes steps to follow accepted communication practices and protocols
Get the work done	1.1-1.3, 2.1-2.2, 3.1-3.2	• Plans and implements routine tasks, aiming to achieve them efficiently • Makes low-impact decisions within familiar situations, based on a range of predefined or routine solutions, and evaluates the effectiveness of the outcome • Understands the purposes, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine tasks

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTSAS204 Record client support requirements	ICASAS204A Record client support requirements	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS204 Record client support requirements

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- log and record calls according to organisational policy and procedures
- prioritise and escalate client support requests according to organisational policy and procedures.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify a range of software and hardware diagnostic tools
- describe organisational procedures for escalating issues
- describe maintenance procedures
- identify business scheduling requirements
- describe current business practices to prepare reports
- identify organisational procedures to rate and prioritise client requests
- identify roles and responsibilities of the information and communications technology (ICT) division.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the systems administration and support field of work and include access to:

- sites where logging and client support may be recorded and prioritised
- client support history records

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- organisational policy and procedures related to:
  - critical process
  - escalation procedures
  - logging procedures
  - prioritising client requests.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS205 Maintain ICT system integrity

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to protect and secure stand-alone or networked client server environments.

It applies to technical support individuals who are required to maintain workflow and quality processes in a small or large office environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Carry out system backup	1.1 Create and review organisational backup schedule 1.2 Determine storage media and hardware for backups 1.3 Ensure backups are carried out according to the schedule 1.4 Label and store backups according to organisational standards 1.5 Maintain records of backups
2. Restore system backup	2.1 Determine and test restoration procedures according to

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ELEMENT	PERFORMANCE CRITERIA
	organisational standards 2.2 Restore data under instruction from an appropriate person 2.3 Restore data according to organisational standards 2.4 Document and report on backup results
3. Maintain virus protection	3.1 Maintain and update virus protection software according to operating system in use 3.2 Carry out virus scanning and report detected viruses to appropriate person 3.3 Remove viruses and update scanning software
4. Follow copyright procedures and record software licences where appropriate	4.1 Identify copyright procedures for licensed software used by the organisation 4.2 Maintain records of licence number and location 4.3 Monitor operation and use of licensed software where applicable 4.4 Check personal computers and networks to ensure software compliance 4.5 Report licensing anomalies related to software to an appropriate person

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.5, 2.1-2.3, 3.1-3.3, 4.1-4.5	• Interprets familiar textual information from a range of sources to identify and review practices and determine that appropriate standards have been maintained • Researches and interprets information to identify, monitor and evaluate technical information and maintain appropriate standards
Writing	1.4, 1.5, 2.4, 4.2, 4.5	• Develops materials and resources using simple vocabulary to record information in a sequential manner, adhering to standards for client engagement as well as internal reference

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Navigate the world of work	1.1-1.5, 2.1-2.4, 3.1-3.3, 4.1-4.5	• Understands roles and responsibilities for task and makes basic decisions on work completion parameters in accordance with organisational standards
Interact with others	2.2, 4.5	• Identifies and takes steps to follow accepted communication practices and protocols
Get the work done	1.1-1.5, 2.1-2.4, 3.1-3.3, 4.1-4.5	• Plans and implements routine tasks, aiming to achieve them efficiently • Makes low-impact decisions within familiar situations, based on a range of predefined or routine solutions, and evaluates the effectiveness of the outcome • Understands the purposes, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine tasks

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTSAS205 Maintain ICT system integrity	ICASAS205A Maintain IT system integrity	Updated to meet Standards for Training Packages. Minor edit to the competency title.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS205 Maintain ICT system integrity

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- protect and secure stand-alone or networked client server environments and operating systems according to system maintenance procedures
- complete file backup according to organisational standards
- recover, delete and archive according to backup and recovery procedure
- check computers and networks for compliance with licensing requirements.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify organisational standards regarding:
  - backup and recovery procedures and operations
  - labelling and storage of backups
- describe current industry accepted hardware and software products
- describe current viruses and protection methods
- identify common diagnostic tools
- identify inventory procedures
- identify maintenance procedures
- describe storage and retrieval guidelines
- explain system performance
- identify software copyright and General Public Licence (GPL) or copyright responsibilities.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the systems administration and support field of work and include access to:

- sites with a representative range of stand-alone and networked client server environments
- antivirus software
- technical records and documentation.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS206 Detect and protect from spam and destructive software

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to reduce the risk of a computer's operation being affected by spam or destructive software.

It applies to technical support individuals who, while working under a level of supervision, have responsibility to exercise the discretion required to protect and secure equipment and software in a small or large office environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Detect and remove destructive software	1.1 Identify common types of destructive software 1.2 Select and install virus protection compatible with the operating system in use 1.3 Investigate other advanced systems of protection for further options

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Install software updates on a regular basis 1.5 Configure software security settings to prevent destructive software from infecting computer 1.6 Run or schedule to run virus protection software on a regular basis 1.7 Report detected destructive software to appropriate person and remove the destructive software
2. Identify and take action to stop spam	2.1 Identify common types of spam 2.2 Take appropriate action in regard to spam 2.3 Configure and use a spam filter 2.4 Report spam to appropriate person

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.5, 2.1-2.3	• Researches and interprets information to identify misleading information and compare technical specifications, and identify solutions to new and emerging issues to maintain system
Writing	1.7, 2.4	• Uses simple vocabulary to report information in a familiar sequential manner to the appropriate personnel
Oral Communication	1.7	• Presents factual information in a clear manner, using specific and appropriate language
Interact with others	1.7	• Identifies and takes steps to follow accepted communication practices and protocols
Get the work done	1.1-1.7, 2.1-2.4	• Plans and implements routine tasks, aiming to achieve them efficiently • Initiates standard diagnostic procedures when responding to familiar and unfamiliar problems within immediate context, and seeks input from others when problems remain unresolved • Understands the purposes, specific functions and key

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		features of common digital systems and tools, and operates them effectively to complete routine tasks

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTSAS206 Detect and protect from spam and destructive software	ICASAS206A Detect and protect from spam and destructive software	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS206 Detect and protect from spam and destructive software

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- install virus protection software and updates
- schedule virus protection software to run on a regular basis
- remove common destructive software
- identify common spam types and take appropriate action.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe spam and virus intrusions and identify appropriate remedial actions
- identify the types of protective applications used against viruses and spam
- identify the operating systems supported by the organisation
- identify the common components of computer hardware that may be affected by spam.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the systems administration and support field of work and include access to:

- sites with a representative range of computer hardware, application software and operating systems
- current antivirus and anti-spam software
- technical records, vendor documentation, enterprise procedures and guidelines.

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Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS207 Protect and secure information assets

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to ensure information assets are protected from improper access and appropriate actions are taken to secure assets in the event that they are threatened.

It applies to individuals who, while working under a level of supervision, have responsibility in a frontline technical support capacity to exercise in a small or large office environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify assets and threats	1.1 Identify types of information assets in the organisation 1.2 Identify mechanisms by which information assets are accessed, transmitted and stored 1.3 Establish nature of threats to information assets and determine effect that loss or damage may have to the organisation
2. Secure assets	2.1 Identify actions, mechanisms and strategies to protect

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ELEMENT	PERFORMANCE CRITERIA
	information assets 2.2 Secure assets within scope of authority 2.3 Report issues to appropriate person and other issues where they are outside scope of authority
3. Mitigate or prevent damage to assets	3.1 Identify signs and evidence that information assets are threatened or undergoing loss or damage 3.2 Provide first level response to reduce effects, mitigate damage and protect evidence 3.3 Report incident, effects and actions to appropriate person

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.3, 2.2, 2.3, 3.1	• Researches and interprets text to identify misleading information and compare technical specifications, and identify solutions to new and emerging issues to maintain system
Writing	2.3, 3.3	• Uses simple vocabulary to report textual information in a sequential manner to the appropriate personnel
Oral Communication	2.3	• Presents factual information in a clear manner, using specific and appropriate language
Navigate the world of work	1.1-1.3, 2.1-2.3, 3.1-3.3	• Understands roles and responsibilities for task and makes basic decisions on work completion parameters in accordance with organisational standards
Interact with others	2.2, 2.3	• Identifies and takes steps to follow accepted communication practices and protocols
Get the work done	1.1-1.3, 2.1-2.3, 3.1-3.3	• Plans and implements routine tasks, aiming to achieve them efficiently • Initiates standard diagnostic procedures when responding to familiar and unfamiliar problems within immediate context, and seeks input from others when problems remain unresolved • Understands the purposes, specific functions and key

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		features of common digital systems and tools, and operates them effectively to complete routine tasks

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTSAS207 Protect and secure information assets	ICASAS207A Protect and secure information assets	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS207 Protect and secure information assets

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- identify the organisation's information assets and the ways in which these assets are used
- establish potential threats to information assets and analyse the effects these threats would have on the organisation
- implement measures to secure assets, and mitigate or prevent damage, according to organisational requirements
- discuss details of security threats and issues relating to information assets with appropriate persons
- report issues or incidents according to organisational requirements.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify information assets and key sources of information assets
- identify the types of security responses available to secure assets
- identify assets supported by the organisation
- describe general information and communications technology (ICT) hardware and security implications
- identify the organisation’s security procedures.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the systems administration and support field of work and include access to:

- a site with computer hardware and office environments representing a range of workplaces
- appropriate software systems
- organisational information assets
- technical records, documentation and enterprise procedures.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS208 Maintain ICT equipment and consumables

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to maintain the operation of basic computer hardware and peripherals, including the replacement of consumables.

It applies to technical support individuals who, while working under a level of supervision, perform mainly routine tasks within an office environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Clean equipment	1.1 Access and verify cleaning supplies for usability on the selected equipment 1.2 Record maintenance actions undertaken according to organisational procedures 1.3 Clean equipment according to manufacturer specifications and organisational manuals 1.4 Ensure basic work health and safety (WHS) principles and

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ELEMENT	PERFORMANCE CRITERIA
	guidelines are followed
2. Replace and maintain consumables and supplies	2.1 Access consumables from storage points and record usage information according to organisational procedures 2.2 Replace consumables when needed and log the action undertaken 2.3 Dispose of consumables following environmental guidelines 2.4 Test equipment to ensure it is in working order at set time periods and according to organisational procedures
3. Maintain equipment	3.1 Establish which equipment requires maintenance 3.2 Maintain equipment according to organisational guidelines and manufacturer specifications 3.3 Document maintenance procedures performed according to organisational guidelines 3.4 Exercise care to prevent interruption of business activities during maintenance procedures 3.5 Store unused equipment devices according to manufacturer specifications and organisational guidelines

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 1.4, 2.1-2.4, 3.1, 3.2, 3.5	• Integrates and evaluates a range of textual information to maintain effective methods and appropriate standards
Writing	1.2, 2.1, 2.2, 3.3	• Uses simple vocabulary to record information in a sequential manner for internal reference
Oral Communication	3.4	• Uses listening and questioning techniques to clarify schedules while maintaining business standards
Numeracy	2.4, 3.4	• Recognises and applies familiar measurements relating to time durations
Navigate the world of work	1.1-1.4, 2,1-2.4, 3.1-3.5	• Understands roles and responsibilities for task and makes basic decisions on work completion parameters

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		in accordance with organisational procedures, WHS and environmental guidelines
Get the work done	1.1-1.4, 2.1-2.4, 3.1-3.5	• Plans and implements routine tasks, aiming to achieve them efficiently • Makes low-impact decisions within familiar situations, based on a range of predefined or routine solutions, and evaluates the effectiveness of the outcome • Understands the purposes, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine tasks

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTSAS208 Maintain ICT equipment and consumables	ICASAS208A Maintain IT equipment and consumables	Updated to meet Standards for Training Packages. Minor edit to the competency title.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS208 Maintain ICT equipment and consumables

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- clean equipment following manufacturer specifications and work health and safety (WHS) policy and procedures
- replace and dispose of consumables according to regulations and organisational policy
- test and maintain equipment in working order, following WHS procedures
- record activities and actions appropriately.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify current industry accepted hardware and software, and manufacturer maintenance guides
- describe organisational systems related to storage and retrieval of information and equipment
- identify workplace health and safety principles and responsibilities, including ergonomics, work periods and breaks, and conservation techniques
- identify chemical storage, control and disposal procedures.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the systems administration and support field of work, and include access to:

- a site at which equipment maintenance may be carried out

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- equipment currently used in industry
- relevant equipment documentation that may affect maintenance activities.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS209 Connect and use a home based local wireless network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to install, configure and secure devices to a small home based local network.

It applies to individuals who, while working under a level of supervision, have responsibility in a frontline technical support capacity.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Confirm requirements for home office wireless network	1.1 Document client requirements and confirm with appropriate person 1.2 Identify available documentation and technical support options 1.3 Identify the digital devices to be connected to the network and confirm wireless network component requirements 1.4 Take action to ensure client support expectations are covered by vendor warranty and support services

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ELEMENT	PERFORMANCE CRITERIA
	1.5 Ensure required work health and safety (WHS) standards are incorporated as part of the installation process
2. Prepare for installation	2.1 Obtain digital devices and wireless network components 2.2 Validate that contents of delivered components and physical contents match the packing list and resolve discrepancies if necessary 2.3 Determine internet service provider (ISP) connection properties
3. Install and configure the wireless router and adapters	3.1 Install the wireless router 3.2 Configure the wireless router using the router configuration properties 3.3 Install the wireless adapters 3.4 Configure the wireless fidelity (Wi-Fi) system
4. Secure the wireless system	4.1 Set the security components of the system 4.2 Test the security components 4.3 Review any updated documentation regarding security issues and the components used

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Learning	1.2, 1.3, 2.1, 3.1-3.4, 4.3	• Identifies and uses basic knowledge of industry hardware and software appropriate to the environment • Identifies and uses new or upgraded technology skills to enhance learning
Reading	1.2-1.5, 2.1-2.3, 3.1-3.4, 4.1-4.3	• Interprets a range of texts to evaluate and integrate strategies to maintain effective methods that adhere to client requirements and standards
Writing	1.1	• Uses simple vocabulary to record information in a sequential manner that adheres to client requirements and for internal reference
Oral	1.1, 1.4	• Uses listening and questioning techniques to confirm

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Communication		requirements
Navigate the world of work	1.1-1.5, 2.1-2.3, 3.1-3.4, 4.1-4.3	• Understands roles and responsibilities for task and makes basic decisions on work completion parameters in accordance with client requirements and WHS standards
Interact with others	1.1, 1.2, 1.4, 2.2	• Identifies and takes steps to follow accepted communication practices and protocols
Get the work done	1.1-1.5, 2.1-2.3, 3.1-3.4, 4.1-4.3	• Plans and implements routine tasks aiming to achieve them efficiently • Makes low-impact decisions within familiar situations, based on a range of predefined or routine solutions and evaluates the effectiveness of the outcome • Understands the purposes, specific functions and key features of common digital systems and tools, and operates them effectively to complete routine tasks

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTSAS209 Connect and use a home based local wireless network	ICASAS209A Connect and use a home based local wireless network	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS209 Connect and use a home based local wireless network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- determine suitable wireless fidelity (Wi-Fi) requirements for small home office style settings
- connect and integrate Wi-Fi components into a small office system safely
- install and configure wireless routers and adapters as part of a Wi-Fi system
- secure components of a Wi-Fi system.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify computer component installation procedures
- describe current industry accepted Wi-Fi network products
- describe Wi-Fi installation requirements
- identify and describe common Wi-Fi systems and Wi-Fi security considerations
- identify internet service provider (ISP) connection protocols
- identify and describe relevant work health and safety (WHS) procedures for electrical equipment
- identify wireless network components.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the systems administration and support field of work, and include access to:

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- the internet to enable configuration procedures
- Wi-Fi equipment currently used in industry
- technical support to support the Wi-Fi installation
- technical documentation.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS303 Care for computer hardware

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to manage the maintenance and location of hardware.

It applies to frontline technical support individuals who work under a level of supervision but have some responsibility to maintain organisational hardware.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish safe work practices	1.1 Determine, record and apply relevant legal requirements and work health and safety (WHS) standards to the installation and maintenance of computer hardware 1.2 Determine, record and apply requirements specified by hardware manufacturers 1.3 Determine, record and apply safe work practices, taking into account legal and manufacturer requirements

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ELEMENT	PERFORMANCE CRITERIA
2. Establish location requirements for hardware and peripherals	2.1 Determine and apply suitable environmental conditions for hardware and peripherals 2.2 Determine and apply system protection devices where appropriate 2.3 Determine and apply requirements when moving hardware 2.4 Determine and apply suitable storage principles for hardware and associated peripherals and media
3. Establish maintenance practices	3.1 Determine maintenance requirements specified by the equipment manufacturer 3.2 Produce maintenance schedules 3.3 Perform diagnostic functions, including replacing suspect components with other serviceable components and reloading associated software 3.4 Determine whether unserviceable components are replaceable through warranty, replacement or upgrade 3.5 Perform diagnostic functions using the operating system and third party diagnostic tools
4. Determine appropriate hardware quality standards	4.1 Consider and apply business requirements in respect of hardware matters 4.2 Determine and apply quality standards to the selection of appropriate hardware and associated peripherals

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.3, 2.1-2.4, 3.1, 3.4, 4.1, 4.2	• Researches and interprets a range of texts to identify requirements and standards, compare technical specifications, and identify solutions to new and emerging issues to maintain the environment
Writing	1.1-1.3, 3.2	• Uses simple vocabulary to record key information in a sequential manner to maintain the appropriate standards and for internal reference

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Oral Communication	3.5	• Presents factual information in a clear manner, using specific and appropriate language
Numeracy	3.2, 4.1	• Recognises and applies familiar measurements relating to time durations and uses mathematical calculations to measure and calculate amounts
Navigate the world of work	1.1-1.3, 4.1, 4.2	• Takes some personal responsibility for adherence to legal and regulatory requirements by establishing safe work practices
Get the work done	All	• Plans and implements routine tasks and workload, making limited decisions on sequencing, timing and collaboration, and seeks assistance in setting priorities • Makes low-impact decisions within familiar situations, based on a range of predefined or routine solutions and evaluates the effectiveness of the outcome • Responds to predictable routine problems and implements standard or logical solutions • Identifies ideas for other applications and considers them in current contexts • Uses digital technology for basic reading, recording and searching information, and communications, following routine procedures and security requirements

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTSAS303 Care for computer hardware	ICASAS303A Care for computer hardware	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS303 Care for computer hardware

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- perform diagnostic functions by replacing components, reloading software and using operating system and other diagnostic tools
- establish location requirements for system hardware and associated peripheral devices
- follow safe work practices
- determine maintenance requirements and establish maintenance schedule
- apply appropriate quality standards to computer hardware and peripherals.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe the range of quality levels in current common hardware
- describe the importance of maintenance
- describe workplace health and safety principles specific to working with mains-powered equipment
- identify and describe the potential environmental effects of common types of hardware
- identify common security issues that impact on computer hardware
- identify the software related to hardware operations
- identify common system hardware and associated peripherals functions.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the systems administration and support field of work and include access to:

- computer hardware, software and diagnostic tools
- warranty records and reports
- maintenance schedules
- vendor documentation
- safe work practices.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS304 Provide basic system administration

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to implement components of systems backup, restore, security and licensing in a stand-alone or client server environment.

It applies to individuals who, while working under limited supervision, have responsibility in a frontline technical support capacity to exercise discretion and judgement, using appropriate knowledge to provide assistance.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Record security access	1.1 Obtain client access requirements and clearance levels according to organisational requirements 1.2 Issue computer or network user account and password details to client 1.3 Provide security documentation and access to client 1.4 Record user account and security access details to maintain

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ELEMENT	PERFORMANCE CRITERIA
	system integrity and assist later auditing
2. Record software licences	2.1 Determine what licensed software is used within the organisation 2.2 Maintain records of licence number and location 2.3 Check personal computers and network for illegal software 2.4 Report illegal software to appropriate person
3. Carry out system backup	3.1 Create or review organisational backup schedule 3.2 Complete file backups according to schedule 3.3 Label and store backups according to organisational requirements 3.4 Maintain record of backups
4. Restore system backup	4.1 Determine and test restore procedures according to organisational guidelines 4.2 Complete a restore under supervision of an appropriate person 4.3 Record completed restore according to organisational guidelines
5. Apply security access controls	5.1 Document security access as per clearance guidelines set by management 5.2 Maintain a security access register in line with organisational guidelines to record which client or groups have access to which resources 5.3 Identify the security controls on the file system provided by the operating system 5.4 Apply effective access control on files and directories

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 2.1, 4.1, 5.1, 5.3	• Interprets and evaluates a range of textual information to maintain effective methods while adhering to appropriate standards

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Writing	1.2, 1.4, 2.2, 2.4, 3.4, 4.3, 5.1, 5.2	• Records detailed information incorporating both factual and professional language that adheres to organisational standards
Oral Communication	1.2, 2.4, 4.2	• Provides information using language appropriate to environment and audience • Uses listening and questioning techniques to confirm understanding
Numeracy	1.4, 2.2, 3.3, 3.4, 4.1-4.3, 5.1-5.4	• Extracts and evaluates the mathematical information embedded in a range of tasks and texts to maintain records for internal reference
Navigate the world of work	1.1-1.4, 2.1-2.4	• Appreciates the implications of legal and regulatory responsibilities related to own work, and is beginning to recognise some general legal principles applicable in relation to security access and software
Interact with others	2.4, 4.2	• Selects the appropriate form, channel and mode of communication when reporting illegal software use • Contributes to specific activities requiring joint responsibility and accountability when completing a restore under supervision
Get the work done	All	• Takes responsibility for planning and organising own work, identifying ways of sequencing and combining elements for greater efficiency, and considering how to link with the work of others • Implements actions as per plan, making slight adjustments if necessary • Selects from a range of pre-determined options in routine situations, identifying and taking some situational factors into account • Monitors and controls access to digitally stored and transmitted information

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTSAS304 Provide basic system administration	ICASAS304A Provide basic system administration	Updated to meet Standards for Training Packages	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS304 Provide basic system administration

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- perform a systems backup, restore and maintain correct usage according to licensing agreements in a stand-alone or client server environment
- maintain software licence records and check for copyright compliance within the system
- maintain security access records and apply access controls on network resources.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe common backup procedures
- identify and outline operating systems used by the organisation
- describe the organisational security procedures
- identify organisational standards to:
  - carry out backup and restore operations
  - label and store backups
  - record security and software details
- describe the selection, functions and features of appropriate diagnostic tools
- identify software copyright responsibilities
- identify the system's current functionality.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the systems administration and support field of work and include access to:

- operating systems
- software licence records
- technical records and documentation
- organisational backup and restore procedures
- organisational security guidelines.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS305 Provide ICT advice to clients

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to provide information and communications technology (ICT) advice and support to clients, including the communication of comprehensive technical information.

It applies to frontline technical support individuals who work under a level of supervision but have responsibility for providing technical support.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Review client support issues	1.1 Check for new problems logged by client 1.2 Check previous logs for similar problems or requests from client 1.3 Investigate and document support issues affecting client 1.4 Notify client of the results of investigation and provide advice and support on findings

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ELEMENT	PERFORMANCE CRITERIA
	1.5 Obtain client feedback and make changes
2. Provide advice on software, hardware or network	2.1 Confirm software, hardware or network requirements with client 2.2 Investigate and document a solution 2.3 Document additional requirements identified in the investigation and refer them to the client 2.4 Obtain approval from client to implement the solution 2.5 Investigate and document amount of technical support client may require 2.6 Discuss and agree level of technical support identified with client 2.7 Arrange time with client when support will take place 2.8 Provide technical support as part of group or one-to-one instruction to the client 2.9 Provide manuals and help documentation to client
3. Obtain client feedback	3.1 Create an appropriate evaluation or feedback form or other mechanism to gather feedback about solution and support provided 3.2 Provide client with instructions on how to complete form or use other means of providing feedback 3.3 Distribute evaluation or feedback to client 3.4 Review feedback from client to identify areas for improvement

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.3 , 1.5, 2.2, 2.5, 3.4	• Interprets and evaluates information to compare technical specifications, identify areas of improvement and recognise solutions to new and emerging issues
Writing	1.3-1.5, 2.2, 2.3, 2.5,	• Uses written vocabulary, grammatical structures and conventions to accurately convey instructions and

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	2.9, 3.1-3.4	record complex information
Oral Communication	1.2, 1.4, 1.5, 2.1, 2.4-2.8	• Participates in verbal exchange of ideas/solutions using detailed and clear language to contribute information for discussion and confirm client requirements • Varies content, structure, style, tone and vocabulary to suit the needs of audiences
Interact with others	1.4, 1.5, 2.1, 2.3, 2.4, 2.6-2.9, 3.2, 3.3	• Participates in routine conversations directly relevant to role, responding and contributing in appropriate ways when providing advice to clients and receiving feedback • Shares information and resources, offers assistance voluntarily and provides feedback on others' work when providing client support
Get the work done	1-1-1.3, 1.5, 2.2-2.5, 2.7, 3.1-3.4	• Plans a range of routine, and some non-routine, tasks, accepting stated goals and aiming to achieve them efficiently when obtaining feedback from client • Implements actions as per plan, making slight adjustments if necessary, and addressing some unexpected issues • Selects from a range of predetermined options in routine situations, identifying and taking some situational factors into account • Applies formal problem solving processes when tackling an unfamiliar problem, breaking complex issues into manageable parts and identifying and evaluating several options for action • Understands key principles and concepts that underpin the design and operation of digital systems and tools

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTSAS305 Provide ICT advice to clients	ICTSAS305A Provide IT advice to clients	Updated to meet Standards for Training Packages.	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
		Minor edit to the competency title.	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS305 Provide ICT advice to clients

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- investigate client support requests and provide a documented solution after consultation with client
- convey comprehensive technical information to clients in a clear, concise, jargon-free and coherent manner
- use technical manuals and ‘help’ documentation.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify and describe the available in-house and vendor support
- explain contract and service agreements with vendors
- identify features of different types of hardware supported by the organisation
- identify sources of information relevant to the provision of services and support
- identify operating system:
  - functions and basic features
  - supported by the organisation
- identify and describe security and network guidelines and procedures
- identify the advanced features of software, including the functions and support provided by the organisation.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the systems administration and support field of work and include access to:

- peers and supervisors for obtaining information
- relevant information sources
- technical records and documentation.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS308 Run standard diagnostic tests

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Application

This unit describes the skills and knowledge required to troubleshoot problems, identify and implement preventative maintenance techniques, and conduct diagnostic tests on a range of platforms.

It applies to individuals who, while working under a level of supervision, have responsibility to action tasks in a frontline technical support capacity.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify common symptoms and preventative maintenance techniques for ICT software and hardware	1.1 Plan troubleshooting processes for ICT software and hardware to guide the resolution of common ICT problems based on requirements for ICT testing and maintenance 1.2 Determine and document common symptoms of ICT problems for ICT software and hardware to increase troubleshooting process efficiency and focus 1.3 Identify and select testing and preventative maintenance

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	techniques taking into consideration the common symptoms of ICT problems to complete planning troubleshooting processes
2. Operate system diagnostics	2.1 Run the system diagnostic program according to specifications to identify required modifications in line with requirements for ICT testing and maintenance 2.2 Modify the system configuration as indicated by the diagnostic program to address symptoms 2.3 Carry out preventative maintenance techniques to address common symptoms of ICT problems
3. Monitor and remove system viruses	3.1 Scan system to check and maintain virus protection 3.2 Report identified viruses and proposed actions to superior to gain approval 3.3 Implement approved actions to remove detected virus infections using software tools and procedures and by restoring backups 3.4 Document virus symptoms and removal information to keep a record of actions for future application

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	**Description**
Reading	• Interprets textual information to identify issues and solutions to maintain the standards
Writing	• Records key information to note output of investigations, and sequences writing to produce cohesive text for reference
Oral Communication	• Presents factual information in a clear manner, using specific language
Interact with others	• Selects and uses appropriate strategies to establish and maintain spoken communication in familiar and some unfamiliar contexts • Derives meaning from oral texts in familiar and some unfamiliar contexts
Get the work done	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes • Makes routine decisions and implements standard procedures for routine tasks, using formal decision making processes for more complex and non-routine situations

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	• Applies problem solving processes, breaking complex issues into manageable parts and identifying and evaluating options for action • Understands key principles and concepts that underpin the design, application and operation of digital systems and tools

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTSAS308 Run standard diagnostic tests	ICTSAS301 Run standard diagnostic tests	Edits to performance criteria and elements to clarify intent. Updates to assessment requirements.	Equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS308 Run standard diagnostic tests

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements and performance criteria of this unit; including evidence of the ability to:

- Identify and document six ICT problems and corresponding testing and preventative maintenance techniques to provide for troubleshooting process planning
- Implement preventative maintenance techniques to address three common symptoms of problems associated with each of the following:
  - desktop application
  - operating system
  - laptop
  - mobile device
  - printer
- Identify and address three virus infections using a system diagnostic program
-

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

- Impact of organisational structure, diagnostic testing procedures and guidelines, and software specifications on conducting diagnostic testing
- Hardware and software diagnostic tools, including products that manage:
  - backup procedures
  - configuration procedures
  - hardware maintenance
  - security
- Common symptoms of problems associated with:
  - desktop applications
  - operating systems

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  - laptops
  - mobile devices
  - printers
- Preventative maintenance techniques relevant to maintaining hardware and software applications
- Common diagnostic testing approaches
-

Assessment Conditions

Skills must be demonstrated in a workplace or simulated environment typical of those in an ICT working environment.

- Hardware and software diagnostic tools and specifications
- System with virus protection software installed
- Tools, equipment, materials, software packages
- ICT documentation including details of current architecture, operating system, software applications, and hardware
- Requirements relating to ICT maintenance and testing
- Individual superior in the organisation

Assessors of this unit must satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS409 Manage risks involving ICT systems and technology

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to implement procedures that identify, analyse, evaluate and monitor risks involving information and communications technology (ICT) systems and technology. This includes the development and management of contingency plans.

It applies to individuals who provide high level technical skills and knowledge, and systematic approaches to manage risk in ICT systems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish risk context	1.1 Review and document organisational and technical environment 1.2 Establish and document risk boundaries according to business operating and strategic environment
2. Identify risk factors	2.1 Develop or acquire a measurement scale for project risk, which

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ELEMENT	PERFORMANCE CRITERIA
	includes importance, complexity, time and resources required 2.2 Identify project risks based on the measurement scale developed and document according to business requirements 2.3 Identify business impact of changes and document according to current and future business directions
3. Implement contingency plans	3.1 Classify each risk and create contingency plans that address how the risk will be monitored and overcome, if possible 3.2 Identify measurable benchmarks to track the treatment of risks to the new system 3.3 Identify risk management intervention points according to benchmarked performance tolerances 3.4 Demonstrate use of phased implementation and piloting to reduce risk factors
4. Monitor, update and report risk profile	4.1 Conduct regular risk updates to add new risks and remove old ones 4.2 Update contingency plans when appropriate to incorporate new information 4.3 Conduct risk reviews at major project milestones and document outcomes 4.4 Establish feedback processes to provide warning of potential new risks according to business requirements

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1	• Compares and contrasts complex technical information and numerical data from different sources to determine requirements and complete necessary actions
Writing	1.1, 1.2, 2.1-2.3, 3.1, 4.2, 4.3	• Develops material using specific and technical language, and organises content in a manner that supports the purpose of the document
Oral	4.1, 4.3, 4.4	• Obtains information by listening and questioning, and participates in verbal exchanges with stakeholders

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Communication		using clear and accurate language to express requirements and present information
Numeracy	2.1-2.3, 3.2, 3.3, 4.2	• Uses mathematical equations to calculate and compare numerical data against benchmarks to determine required actions • Creates or uses measurement scales to rate and prioritise risk
Interact with others	4.1, 4.3, 4.4	• Selects and uses appropriate conventions and protocols when communicating with stakeholders in a range of work contexts
Get the work done	1.1, 1.2, 2.1-2.3, 3.1-3.4, 4.1-4.4	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes • Uses formal analytical thinking techniques for identifying issues and generating possible solutions, seeking input from others as required

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTSAS409 Manage risks involving ICT systems and technology	ICASAS409A Manage risks involving ICT systems and technology	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS409 Manage risks involving ICT systems and technology

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- identify and document where risk occurs
- develop and implement measures to mitigate or obviate risk
- set up procedures for regular risk management
- monitor, review and report risk profile

Note: Evidence must be provided for at least TWO information and communications technology (ICT) environments.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- analyse and discuss risk management strategies and issues
- outline key features of regulation, standards and codes of practice relevant to risk management including:
  - ethics
  - copyright and intellectual property
  - privacy legislation
- identify and describe guidelines required for updating technology
- describe the business supply chain for the ICT industry
- summarise user analysis and the client relationship management (CRM) systems
- describe business process design principles in relation to risk management.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the systems administration and support field of work and include access to:

- special purpose tools, equipment and materials
- industry software packages
- analysis software
- business website
- networks
- requirements documentation
- risk management plan
- site server
- site server software
- software applications
- updated or new technology
- user analysis
- web servers.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS502 Establish and maintain client user liaison

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to establish and maintain client user liaison in an information and communications technology (ICT) environment, post support implementation. This occurs after the business critical functions have been determined.

It applies to individuals who are responsible for system and business analysis and administration, and liaising with clients to ensure that their requirements are fully met.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine support areas	1.1 Identify and record information communications technology used in the organisational unit 1.2 Identify stakeholders of the system 1.3 Identify organisational structure, culture and politics related to support requirements 1.4 Determine the level of support required by each organisational

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ELEMENT	PERFORMANCE CRITERIA
	unit
2. Develop support procedures	2.1 Contact organisational units as required to verify support needs 2.2 Establish procedures for providing required support, including method of contact, frequency of meetings and reporting 2.3 Document agreed procedures or service level agreement (SLA)
3. Assign support personnel	3.1 Identify ICT skills required to assist each organisational unit with support activities 3.2 Assign personnel according to human resource processes 3.3 Verify availability of selected personnel 3.4 Provide support using agreed procedures 3.5 Obtain feedback from appropriate persons on a regular basis

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.3, 3.1	• Comprehends textual information and numerical data to determine and adhere to required actions
Writing	1.1, 2.1, 2.3, 3.3, 3.5	• Records key information in the required format and layout, and develops material to a specific audience using clear and detailed language to convey explicit information, requirements and recommendations
Oral Communication	2.1, 3.3, 3.5	• Uses appropriate language, tone and pace to interact effectively with others, and listening and questioning techniques to obtain feedback relevant to the task
Navigate the world of work	3.2, 3.4	• Takes full responsibility for following policies, procedures and legislative requirements, and identifies organisational implications of new legislation or regulation • Seeks to improve policies and procedures to better meet organisational goals
Interact with others	2.1, 3.2, 3.3, 3.5	• Implements strategies for a diverse range of colleagues and clients to build rapport and foster strong relationships

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		• Influences and fosters a collaborative culture, and facilitates a sense of commitment and workplace cohesion
Get the work done	1.4, 2.1, 2.2, 3.4, 3.5	• Plans strategic priorities and outcomes within a flexible, efficient and effective context in a diverse environment exposed to competing demands • Gathers and analyses data and seeks feedback to improve plans and processes • Addresses complex problems involving multiple variables, using formal analytical, lateral thinking techniques, experience and knowledge to focus in on the root cause

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTSAS502 Establish and maintain client user liaison	ICASAS502A Establish and maintain client user liaison	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS502 Establish and maintain client user liaison

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- establish and maintain client liaison
- establish and document procedures for providing required support
- identify information and communications technology (ICT) skill requirements
- assign appropriate support personnel.

Note: Evidence must be provided in at least TWO ICT environments.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- specify adequate response times for providing services
- analyse the role of stakeholders in the organisation, and their level of dependence on ICT infrastructure
- explain the capabilities of a range of ICT devices
- research and evaluate current industry accepted hardware and software products
- identify and describe equipment that is vital in supplying business critical services, including:
  - internet file transaction security for client accounts
  - web server for e-business
- describe in detail the areas related to the organisation’s services and the ICT system functionality required to supply the essential and desirable services to the organisation
- describe the quality assurance practices relating to the supplied service and service level agreements (SLAs)
- analyse the role of ICT in the client's business domain
- identify and describe server types to provide:
  - application

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- backup
- email
- firewall
- proxy
- web.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the systems administration and support field of work, and include access to:

- special purpose tools, equipment and materials
- industry software packages
- agreed procedures or SLAs
- documented support requirements
- technical records and documentation.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS505 Review and update disaster recovery and contingency plans

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to analyse the impact of the system on the organisation and carry out risk analysis, disaster recovery and contingency planning.

It applies to individuals who apply a wide range of higher level technical skills and systematic problem solving approaches in information and communications technology (ICT) related areas.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Evaluate impact of system on business continuity	1.1 Identify business critical functions and the security environment from documentation and from discussion with business area and project team 1.2 Identify critical data and software from documentation 1.3 Assess potential impact of business risk and threats on ICT systems

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Identify and evaluate statutory requirements, commercial requirements and contingency possibilities according to specifications and cost constraints
2. Evaluate threats to system	2.1 Identify threats to the system, considering security analysis and internal and external business environment 2.2 Evaluate risk minimisation alternatives against specifications and cost constraints
3. Formulate prevention and recovery strategy	3.1 Evaluate prevention and recovery options to support critical business functions against business specifications and cost constraints 3.2 Review current operational procedures to ensure adequate risk safeguards and contingency plans are in place 3.3 Submit disaster recovery and prevention strategy to appropriate person for approval
4. Develop disaster recovery plan to support strategy	4.1 Identify and document resources required for disaster recovery according to specifications and cost constraints 4.2 Identify and document processes required for disaster strategy according to project standards 4.3 Identify cut-over criteria before initiating disaster plan 4.4 Document disaster recovery plan and submit to appropriate person for review and sign-off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 1.4, 3.2, 4.1, 4.3	• Researches and analyses textual information and technical data/specifications from a range of documentation and sources to inform the development of contingency plans
Writing	3.3, 4.1,4.2, 4.4	• Uses clear and accurate language and formats appropriate to the task to convey explicit technical information, systems data requirements and recommendations

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Oral Communication	1.1	• Participates in a verbal exchange of ideas and elicits the view and opinions of others by listening and questioning
Numeracy	1.2, 1.4, 4.4	• Accurately interprets, analyses and documents numerical, financial and technical system data
Navigate the world of work	1.4, 2.1, 3.2, 4.2	• Develops and implements strategies to ensure organisational policies, procedures and regulatory requirements are met • Monitors and reviews the organisations policies, procedures and adherence to legislative requirements to implement and manage change
Interact with others	1.1, 3.3, 4.4	• Uses relevant communication tools and strategies in building and maintaining effective working relationships • Influences and fosters a collaborative culture that facilitates a sense of commitment and workplace cohesion
Get the work done	1.1, 1.3, 1.4, 2.1, 2.2, 3.1, 3.2	• Plans strategic priorities and outcomes within a flexible, efficient and effective context in a diverse environment exposed to competing demands • Gathers and analyses data and seeks feedback to improve plans and processes • Addresses complex problems involving multiple variables, using formal analytical, lateral thinking techniques, experience and knowledge to focus in on the root cause

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTSAS505 Review and update disaster recovery and contingency plans	ICASAS505A Review and update disaster recovery and contingency plans	Updated to meet Standards for Training Packages	Equivalent unit

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Links

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Assessment Requirements for ICTSAS505 Review and update disaster recovery and contingency plans

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- develop a contingency plan that identifies threats and minimises down time for business critical functions
- develop clear and specific directions on how to handle serious down time
- coordinate, plan and articulate flexible logistics requirements.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- compare and contrast backup methodologies
- explain the business planning process relevant to the development of information and communication technology (ICT) business solutions
- analyse the client business domain
- evaluate disaster recovery plan strategies and components, including:
  - physical security
  - system failure, accident or sabotage (hackers)
  - denial of service
  - virus attack
  - cyber attack
  - telecommunications failure
  - contingency arrangements
- interpret and analyse key workplace health and safety, legislative and organisational requirements relevant to the task
- evaluate the organisation’s current systems functionality and systems engineering.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the systems administration and support field of work, and include access to:

- vulnerability assessment and general definition of requirements
- acceptance test plan
- business impact analysis
- information technology security assurance specifications
- relevant statutory documentation.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS512 Review and manage delivery of maintenance services

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to review and manage the delivery of maintenance services.

It applies to individuals with managerial experience and responsibility for supervising individuals working under their direct or indirect supervision.

No licensing, legislative, or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Review service standards	1.1 Review service level agreements (SLAs) 1.2 Identify actual fault reporting and restoration performance, and compare with SLAs to ensure they meet requirements 1.3 Record areas of discrepancy
2. Review infrastructure	2.1 Identify internal support and maintenance options 2.2 Undertake a review of infrastructure

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ELEMENT	PERFORMANCE CRITERIA
	2.3 Record areas of discrepancy
3. Determine and implement solutions	3.1 Compare service standards and infrastructure discrepancies, and identify gaps in existing service 3.2 Document discrepancies identified 3.3 Determine cost effective solutions and impact 3.4 Implement solutions
4. Organise reviews	4.1 Determine guidelines for regular reviews with stakeholders 4.2 Undertake reviews as per agreed guidelines 4.3 Document review process and submit to the stakeholder 4.4 Ensure effective reporting procedures are in place and used

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 3.1	• Evaluates textual and numerical information from a range of documentation to inform maintenance requirements and solutions
Writing	1.3, 2.1, 2.3, 3.2, 4.1, 4.3	• Uses clear and precise language and document formats appropriate to the task to convey explicit information and instructions
Numeracy	3.3	• Calculates and compares whole numbers and decimals to estimate projected costs against budgets
Navigate the world of work	3.4, 4.2, 4.4	• Works independently and collectively in making decisions to achieve organisation outcomes in maintenance service delivery
Get the work done	1.2, 2.1, 2.2, 3.1, 3.3, 3.4, 4.1-4.4	• Accepts responsibility for planning, prioritising and sequencing complex tasks and workload • Uses problem solving techniques to analyse required outcomes in order to manage maintenance-service delivery

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Unit Mapping Information

Code and title **current version**	**Code and title** **previous version**	**Comments**	**Equivalence status**
ICTSAS512 Review and manage delivery of maintenance services	ICASAS512A Review and manage delivery of maintenance services	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS512 Review and manage delivery of maintenance services

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- analyse and report on faults and restoration performance
- comply with service level agreement (SLA)
- review infrastructure and document discrepancies
- analyse and prioritise requests according to business requirements
- implement cost effective solutions and evaluate impact.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe and explain business scheduling requirements
- discuss capacity planning and change-control procedures
- compare and contrast current industry accepted hardware and software products, including their general features and capabilities
- outline key features of the client business domain
- evaluate help desk and maintenance practices
- analyse the role of stakeholders and the degree of stakeholder involvement
- describe the system's current functionality and the features and functions of system under modification.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the systems administration and support field of work, and include access to:

- special purpose tools, equipment and materials
- industry software packages
- sites on which review of maintenance-services delivery may be conducted
- established ICT service infrastructure
- SLAs and business guidelines.

Assessor must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS517 Use network tools

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to use tools to assist in managing a network effectively.

It applies to individuals who apply technical and specialised knowledge to monitor security and resolve issues for the network.

No licensing, legislative, or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Use command line tools	1.1 Analyse command-line environment 1.2 Differentiate command-line and graphical user interface (GUI) systems 1.3 Identify command-line tools 1.4 Apply command-line tools in GUI environment
2. Use hardware tools	2.1 Identify appropriate hardware tools and their function 2.2 Review work health and safety (WHS) requirements for tool

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ELEMENT	PERFORMANCE CRITERIA
	use 2.3 Manage network using hardware tools 2.4 Analyse test results
3. Use software tools	3.1 Identify appropriate software tools for network security 3.2 Determine areas of vulnerability 3.3 Classify function of each tool 3.4 Manage network using software tools 3.5 Analyse test results

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 2.1, 2.2, 3.1	• Identifies and interprets textual information and numerical data from a range of sources to determine necessary actions
Writing	1.3	• Records textual and numerical data in format specific to requirements
Numeracy	3.5	• Uses mathematical equations to calculate numerical data and compare test outcomes
Get the work done	1.1-1.3, 2.1, 2.3, 2.4, 3.1-3.5	• Accepts responsibility for planning, prioritising and sequencing complex tasks and workload • Uses problem solving techniques to analyse required outcomes and manage the network • Uses digital technologies to manage network operations

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status

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Code and title current version	Code and title previous version	Comments	Equivalence status
ICTSAS517 Use network tools	ICASAS517A Use network tools	Updated to meet Standards for Training Packages. Minor edits to the performance criteria for clarity.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS517 Use network tools

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- to manage a network effectively
- identify and use appropriate hardware and software tools:
- monitor network performance
- identify network threats
- isolate security breaches.

Note: Evidence must be provided on at least TWO networks or occasions.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe available network tools
- explain processes and techniques related to using network tools
- analyse key features of the range of attacks that affect network security
- discuss key problems and challenges relating to network security.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the systems administration and support field of work, and include access to:

- special purpose tools, equipment and materials
- hardware and software tools
- security diagnostic software
- maintenance procedures
- network system.

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Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS518 Install and upgrade operating systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to maintain, install new and upgrade existing operating systems (OS) in a medium to large organisation.

It applies to individuals who apply technical and specialised knowledge to undertake complex support operations.

No licensing, legislative, or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine organisational help desk procedures	1.1 Review organisation’s technical support procedures 1.2 Interrogate help desk system 1.3 Liaise with client
2. Install or upgrade a desktop OS	2.1 Install an OS 2.2 Upgrade an existing OS 2.3 Research and implement automated OS installation techniques

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ELEMENT	PERFORMANCE CRITERIA
	and procedures 2.4 Migrate files
3. Manage and troubleshoot resource access	3.1 Configure local resources access 3.2 Configure sharing of local resources 3.3 Assign access rights to shared resources
4. Configure and troubleshoot hardware devices and drivers	4.1 Determine and resolve problems with hardware resources 4.2 Research and install appropriate device drivers 4.3 Configure hardware resources 4.4 Configure device drivers
5. Configure and troubleshoot the desktop and user environments	5.1 Construct profiles for users 5.2 Organise shortcuts 5.3 Arrange screen management

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 2.3, 3.1-3.3, 4.2	• Interprets and analyses a range of textual information and numerical data from a range of technical sources to determine necessary actions
Writing	1.3	• Uses clear and precise information and numerical data in appropriate formats to convey information to clients/users
Oral Communication	1.3	• Uses clear and accurate language to convey technical information to clients/users
Numeracy	1.1, 2.3, 4.2	• Interprets and applies numerical data in source materials relevant to the activity
Interact with others	1.3	• Identifies and uses appropriate conventions and protocols when communicating with clients
Get the work	1.2, 2.1-2.4, 3.1-3.3,	• Accepts responsibility for planning, prioritising and sequencing complex tasks and workload

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done	4.1-4.4, 5.1-5.3	• Uses problem solving techniques to analyse required outcomes to manage client operating systems • Uses digital technologies to manage information and communications technology (ICT) operations

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTSAS518 Install and upgrade operating systems	ICASAS518A Install and upgrade operating systems	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS518 Install and upgrade operating systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- determine organisation operating systems (OS) requirements
- install or upgrade OS
- customise OS to user requirements
- manage and configure hardware devices
- manage and configure desktop.

Note: Evidence must be provided for at least TWO operating systems.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain procedures and techniques involved in the installation and upgrade of OS
- explain procedures and principals involved in unattended OS installation
- describe OS configuration issues that may arise with hardware and desktop environments.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the systems administration and support field of work, and include access to:

- special purpose tools, equipment and materials
- industry software packages
- stand-alone or networked personal computers
- appropriate OS installation compact disk or recovery boot disks
- drivers for connected devices

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- helpdesk system
- OS service packs.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS519 Perform systems tests

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Application

This unit describes the skills and knowledge required to ensure that the properties of an entire system are tested and proved adequate before handover to the user for final acceptance testing.

It applies to individuals employed in a range of information and communications technology (ICT) work environments who apply specialised and technical knowledge and systematic approaches to testing, fault finding and problem solving.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for test	1.1 Determine acceptance criteria from system specifications 1.2 Determine and document software life cycle according to system specifications and contact in operations 1.3 Define test plan from acceptance criteria, software life cycle, system specifications and in compliance with organisational testing and acceptance processes 1.4 Notify contact in operations of scheduled tests to understand

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	implications for operations and modify schedule to minimise implications for operations 1.5 Develop test scripts for online test and test run for batch test according to test plan 1.6 Prepare test environment and select test tools according to test plan 1.7 Prepare test logs and result sheets according to test plan 1.8 Conduct walk-through with superior to review expected results against acceptance criteria and incorporate feedback
2. Conduct test	2.1 Create clean test environment and initialise test environment according to test plan 2.2 Run test scripts and document results according to organisational testing and acceptance processes and test plan 2.3 Finalise test environment and document completed tests according to test plan and test logs and result sheets. 2.4 Compare and document actual results to expected results for each system unit and complete result sheets
3. Analyse and classify results	3.1 Analyse test results against acceptance criteria to identify variances 3.2 Summarise and classify test results to prepare report highlighting critical and urgent variances 3.3 Notify contact in operations of test completion to communicate implications 3.4 Obtain and incorporate feedback from superior on test results report to finalise report

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	**Description**
Reading	• Interprets and analyses a range of textual information and numerical data to determine necessary actions
Writing	• Uses clear language to record and report technical information, and checks for accuracy at all times • Uses writing style and documentation formats appropriate to the task
Oral	• Uses clear and accurate language to provide and obtain information

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Communication	relevant to the task
Numeracy	• Uses mathematical equations to calculate technical data • Accurately records, analyses and documents numerical and technical system data
Navigate the world of work	• Takes full responsibility for following policies, procedures and legislative requirements
Interact with others	• Influences and fosters a collaborative culture and facilitates a sense of commitment and workplace cohesion • Uses communication tools and strategies to build and maintain effective working relationships
Get the work done	• Plans strategic priorities and outcomes within a flexible, efficient and effective context in a diverse environment exposed to competing demands • Gathers and analyses data and seeks feedback to improve plans and processes • Applies systematic and analytical decision making processes for complex and non-routine situations • Addresses complex problems involving multiple variables, using formal analytical, lateral thinking techniques, experience and knowledge to focus in on the root cause

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTSAS519 Perform systems tests	ICTSAS503 Perform systems tests	Edits to performance criteria to clarify intent. Updates to assessment requirements.	Equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS519 Perform systems tests

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements and performance criteria of this unit; including evidence of the ability to:

- Perform two system tests on a system including:
  - develop acceptance criteria
  - develop test plans
  - prepare and initialise a clean test environment
  - test the operation and consistency of the total system prior to delivery according to system specifications, including testing:
    - performance
    - security
    - configuration sensitivity
    - start-up and recovery from failure modes
  - analyse and report test results
  - obtain and act on feedback coming from test results
  -

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

- Key features and processes of automated test tools
- Typical procedures for system testing and acceptance
- Implications for organisational operations of system testing activities
- Software life cycles
- Test planning and scheduling
- Test script development
- Test environment preparation

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Assessment Conditions

Skills must be demonstrated in a workplace or simulated environment where the conditions are typical of those in an ICT working environment or workplace. This includes:

- Relevant industry software packages
- Documentation of system requirements and design
- Organisational testing and acceptance processes
- Individual contact in operations in the organisation
- Superior in the organisation
- Hardware and environments for system test use
- System or application suitable for testing

Assessors of this unit must satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSAS520 Develop detailed test plans

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Application

This unit describes the skills and knowledge required to plan for testing information and communications technology (ICT) systems including software, systems administration, networking, and web development, by collating documentation of conditions and expected results sufficiently to allow for thorough system testing.

It applies to individuals who use technical and specialised knowledge and systematic approaches in performing or organising others to complete complex technical testing operations.

No licensing, legislative, or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare test environment and stakeholders	1.1 Determine structure of system and user accounts to understand test environment from system specifications 1.2 Develop and document draft test plan according to organisational testing procedures and system specifications 1.3 Notify stakeholders of test objectives and test schedule

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	according to organisational testing procedures 1.4 Notify contact in operations of scheduled test and incorporate feedback to ensure preparedness and common understanding of implications and dependencies
2. Prepare test data and schedule	2.1 Gather test schedules according to organisational testing procedures 2.2 Correlate schedules with related functionality according to organisational testing procedures 2.3 Check testing schedule prior to validation according to organisational testing procedures 2.4 Prepare test according to the test plan and document expected results 2.5 Register test plan and initiate log entries according to organisational testing procedures
3. Complete test plan and acceptance processes	3.1 Validate test and acceptance processes with stakeholders 3.2 Finalise test plan and ensure documentation is compliant with organisational testing procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	**Description**
Reading	• Analyses and evaluates textual and numerical information from a range of documentation to determine required action
Writing	• Uses clear and precise language and document formats appropriate to the audience and task to convey explicit information and instructions
Oral Communication	• Uses clear and accurate language, and inclusive and collaborative techniques to convey information to a range of personnel
Interact with others	• Identifies and uses appropriate conventions and protocols when communicating with colleagues and others
Get the work done	• Accepts responsibility for planning, prioritising and sequencing complex tasks and workload • Applies systematic and analytical decision making processes for complex and non-routine situations • Uses digital technologies to manage ICT operations

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTSAS520 Develop detailed test plans	ICTSAS513 Develop detailed test plans	Edits to elements and performance criteria to clarify intent. Updates to assessment requirements.	Equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS520 Develop detailed test plans

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements and performance criteria of this unit; including evidence of the ability to:

- For two systems:
  - interpret software specifications to plan for system testing
  - develop a comprehensive test plan that includes:
    - test approach including activities
    - test conditions and cases to be applied
    - test objectives
    - acceptance processes
    - data to be processed
    - automated testing coverage
    - expected results
    - dependencies
    - quality benchmarks
  - gain acceptance of test objectives and test schedule from stakeholders and contact in operations
  -

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

- Systems relevant to testing requirements
- System specifications analysis
- Implications of testing processes for organisation
- Quality benchmarks for comparison
- Testing approaches and processes and associated advantages and disadvantages in different scenarios

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Assessment Conditions

Skills must be demonstrated in a workplace or simulated environment where the conditions are typical of those in an ICT working environment or workplace. This includes:

- Testing software package
- System engineering management plan
- Test and evaluation program plan
- System suitable for testing and associated documentation including system specifications
- User account details
- Individual stakeholders
- Individual contact in operations in the organisation
- Organisational testing procedures including acceptable test approaches, log entry requirements and quality benchmarks.

Assessors of this unit must satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

Links

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ICTSAS522 Manage the testing process

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Application

This unit describes the skills and knowledge required to effectively manage and administer the end-to-end testing process, including test definition, execution and reporting.

It applies to experienced individuals who work autonomously in performing or organising others to undertake testing of systems and applications.

No licensing, legislative, or certification requirements apply to this unit at the time of publication.

Unit Sector

Systems administration and support

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine test scope and schedule	1.1 Determine testing requirements and objectives based on system requirements and acceptance criteria 1.2 Develop test plans based on system and testing requirements and objectives 1.3 Develop testing timelines and allocate resources according to organisational requirements and objectives 1.4 Document test schedules according to test procedures and provide to superior

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	1.5 Obtain feedback from superior on test requirements, objectives, and schedule and incorporate required changes
2. Manage test procedures	2.1 Insert code into the test environment 2.2 Allocate personnel to testing procedures and manage work to ensure test procedures are carried out according to requirements and objectives 2.3 Administer alterations to the code if errors are detected 2.4 Integrate code into production environment 2.5 Administer full system test to ensure suitability of the system
3. Review the completeness and accuracy of the system	3.1 Record, prioritise, and investigate discrepancies and corrections according to organisational testing procedures 3.2 Brief superior on test results and agree required actions 3.3 Schedule required code changes based on test results 3.4 Evaluate results of system test against acceptance criteria to determine acceptability of system

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	**Description**
Reading	• Compares and evaluates textual information and numerical data and specifications from documentation to inform testing requirements
Writing	• Uses technically specific language and a range of writing styles to articulate requirements • Uses appropriate formats and structures to present information logically for different audiences and revises documents based on feedback and outcomes
Oral Communication	• Explains technical requirements and plans to relevant personnel, using clear and precise language and listening and questioning skills to confirm understanding
Interact with others	• Identifies and uses appropriate conventions and protocols when communicating with colleagues and others
Get the work done	• Develops plans to manage relatively complex routine and non-routine tasks with an awareness of how they might contribute to broader strategy and goals • Uses problem solving techniques to analyse required outcomes in

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	order to manage the testing process • Uses digital technologies to manage operations

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTSAS522 Manage the testing process	ICTSAS515 Manage the testing process	Edits to elements and performance criteria to clarify intent. Updates to Assessment Requirements.	Equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSAS522 Manage the testing process

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements and performance criteria of this unit; including evidence of the ability to:

- Develop one test schedule including plan, timeline, objectives and reporting arrangements
- Manage the testing process including allocating personnel to testing procedures on one occasion
- Review the system based on test results, brief organisational representative or line manager on outcomes and evaluate the results to determine acceptability on one occasion
- Identify, prioritise, schedule and evaluate required code changes based on test results on one occasion

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

- Testing techniques and automated test tools and associated key features and processes
- Typical testing procedures, standards and requirements
- Key system requirements and features
- Resource allocation and scheduling approaches and methodologies
- System testing evaluation methodologies

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in an ICT working environment or workplace. This includes access to:

- Automated testing tools
- System requirements and acceptance criteria
- Organisational testing procedures and standards
- Project procedures and timeframe

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- Individual organisational representative or line manager
- Individual personnel carrying out test procedures
- Test hardware and environments; test and production
- System or application suitable for testing

Assessors of this unit must satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSMB401 Set up and operate a contractor business

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to own, operate and manage a small scale contractor business with employees that install telecommunications services.

It applies to individuals who operate their own contracting business delivering and installing telecommunications services to major service providers.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Unit Sector

Telecommunications – small and micro business

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Set up business operation	1.1 Develop business plan for small business operation according to business planning guidelines 1.2 Follow statutory and legal requirements to register business 1.3 Mitigate liabilities by obtaining adequate business insurance 1.4 Provide and maintain vehicle through purchase, lease or hire purchase, including managing fringe benefits tax (FBT) liabilities

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	according to business plan
2. Provide client service	2.1 Develop and maintain client base to support business plan 2.2 Analyse and determine client expectations in relation to industry standards 2.3 Provide client service that meets client expectations according to enterprise standards 2.4 Monitor and evaluate performance on installations completed against industry standards
3. Perform small business financial management tasks	3.1 Record income and expenditure using bookkeeping tools and software according to normal accounting standards 3.2 Construct small business financial balance sheet using banking records or supply information to accountant according to normal accounting standards 3.3 Calculate small business taxation and superannuation requirements or supply information to accountant according to normal accounting standards 3.4 Complete a business activity statement (BAS) or supply data to accountant according to normal accounting standards
4. Cost and quote installation	4.1 Establish extent of work to be completed through professional and personable discussions with client 4.2 Complete job specification for quote with cost estimates of time required to complete work 4.3 Estimate and include cost of materials using supplier quoted prices 4.4 Determine and include margin for profit and ongoing costs for installation according to business plan 4.5 Check finalised quote for accuracy 4.6 Submit quote to client within agreed timeframe

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1-1.4, 2.2, 2.4,	• Evaluates and integrates facts and ideas to construct meaning from a prescribed and limited

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	3.4, 4.3, 4.5	range of text types, including relevant regulatory, taxation and insurance information
Writing	1.1, 2.1, 2.3, 2.4, 3.4, 4.2, 4.6	• Conveys intended meaning on familiar topics for a limited range of purposes and audiences
Oral Communication	2.3, 2.4, 4.1	• Selects and uses appropriate strategies to establish and maintain spoken communication in familiar and some unfamiliar contexts, particularly in relation to clients, employees and government officers
Numeracy	1.1, 1.3, 1.4, 2.2, 2.4, 3.1-3.4, 4.1-4.6	• Selects from and uses a variety of mathematical and problem solving strategies in a range of familiar and some less familiar contexts, including preparation of quotes and calculation of profit margins • Extracts and evaluates the mathematical information embedded in a range of tasks and texts, including interpretation of financial information
Navigate the world of work	1.2, 2.3	• Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to business registration • Recognises and follows protocols in relation to enterprise standards and meets client expectations associated with role
Get the work done	1.1, 1.3, 1.4, 2.1-2.4, 3.1, 3.2, 4.1	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context to develop a business plan • Implements actions as per plan, making slight adjustments if necessary, and addressing some unexpected issues • Makes a range of critical and non-critical decisions in relation to mitigating liabilities and providing client service, taking a range of constraints into account • Uses analytical processes to decide on a course of action, establishing criteria for deciding between options when developing client solutions • Uses a broad range of features within bookkeeping tools and applications to improve personal productivity, optimising software functions for specific purposes

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTSMB401 Set up and operate a contractor business	ICTSMB4160A Set up and operate a contractor business	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSMB401 Set up and operate a contractor business

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- produce a business plan and set up a business
- define and meet client needs
- perform simple financial management tasks including maintaining simple financial records, and completing business activity statement (BAS), fringe benefits tax (FBT) and insurance documentation
- quote for installation jobs that cover all aspects of costing.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- specify business registration and licensing requirements
- identify and describe Commonwealth, state, territory and local government legislative requirements relating to business operations including:
  - anti-discrimination
  - environmental issues
  - equal employment opportunity
  - industrial relations
  - work health and safety (WHS)
  - taxation requirements
- analyse costs associated with running a business
- identify the current tax rates
- identify relevant industry codes of practice and evaluate their impact on the business
- identify relevant industry standards in relation to:

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  - materials and labour costs
  - rates of pay
- identify common business liabilities
- evaluate several sources of advice and specialist services
- identify sources of information about regulatory, taxation and insurance requirements and issues.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – small and micro business field of work and include access to:

- Australian Taxation Office guides
- industry standards labour rates
- general office bookkeeping procedures
- client service guides
- material suppliers
- financial management record keeping software.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSMB402 Operate a contractor business with employees

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes skills and knowledge required to operate a contracting business in a competitive installation environment. This includes recruiting and managing employees as well as promoting the business and maintaining business compliance.

It applies to individuals who operate or are establishing an installation business employing support staff or installers. It may also apply to a business that uses subcontractors.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Unit Sector

Telecommunications – small and micro business

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Recruit employees	1.1 Define and document employee roles 1.2 Locate and tap sources of employees 1.3 Evaluate and select candidates for employment based on documented employee roles

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	1.4 Provide induction to employees
2. Manage employees	2.1 Assign work to employees in line with employee roles 2.2 Develop strategy for retention of employees with rewards and incentives 2.3 Apply payroll operation 2.4 Maintain and manage employee on-costs using manual or computer based system 2.5 Monitor and evaluate employee performance against business policies and standards
3. Promote the business	3.1 Identify growth opportunities for the business 3.2 Design and develop advertising material to stimulate growth of the business, including evaluating process for establishing website 3.3 Research availability of network to promote the business
4. Maintain compliance	4.1 Research and identify compliance requirements for the business 4.2 Develop and implement procedures to ensure compliance 4.3 Implement system to monitor compliance 4.4 Implement actions to improve compliance performance

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.2, 1.3, 2.1, 2.5, 3.1-3.3, 4.1	• Evaluates and integrates facts and ideas to construct meaning from a range of text types
Writing	1.1, 1.4, 2.2, 2.3, 2.5, 3.2, 3.3, 4.1, 4.2	• Communicates relationships between ideas and information in a style appropriate to the audience and purpose including business plans, advertising materials, job descriptions and business procedures
Oral Communication	1.2-1.4, 2.1, 2.5, 4.2-4.4	• Listens to others carefully and critically and demonstrates flexibility in spoken texts by choosing appropriate structures and strategies in a range of contexts such as engagement with clients, employees and contractors

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Numeracy	2.3, 2.4	• Selects from and uses a variety of mathematical and problem solving strategies in a range of familiar and some less familiar contexts, including checking financial information
Get the work done	1.4, 2,1, 2.5, 3.1, 3.2, 4.2-4.4	• Uses a formal decision making process when selecting staff and monitoring their performance, setting or clarifying goals, gathering information, and identifying and evaluating several choices against a limited set of criteria • Uses analytical processes to decide on a course of action, establishing criteria for deciding between options in relation to identifying growth opportunities • Understands and explicitly applies some basic principles of analytical and lateral thinking when developing promotional material and developing and implementing a compliance system • Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others and taking into account capabilities, efficiencies and effectiveness • Makes critical decisions quickly and intuitively in complex situations, taking into consideration a range of variables including the outcomes of previous decisions • Applies systematic and analytical decision making processes for complex and non-routine situations

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTSMB402 Operate a contractor business with employees	ICTSMB4161A Operate a contractor business with employees	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSMB402 Operate a contractor business with employees

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- recruit employees and document roles
- maintain payroll management records
- allocate work and supervise employees
- identify business growth opportunities
- develop promotional materials
- identify business compliance requirements
- develop compliance processes
- monitor compliance

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- interpret Commonwealth, state, territory and local government legislative requirements relating to contract business operation, including those relating to:
  - anti-discrimination
  - the environment
  - equal employment opportunity
  - industrial relations
  - work health and safety (WHS)
- outline and evaluate the common methods of marketing relevant to a contractor business
- identify and interpret compliance requirements within the limits of an installation service business
- identify sources of advice and specialist services.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – small and micro business field of work and include access to:

- resources and references, including Australian Taxation Office guides, human resource texts, recruitment guides and compliance legislation codes and practices
- performance management tools
- financial management record-keeping software.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSUS402 Install and test power saving hardware

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to install and test power saving components in servers, motherboards and other networking equipment.

It applies to individuals in the information and communications technology (ICT) industry who operate with a degree of autonomy, but who may also supervise the work of others when necessary.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – sustainability

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan to install and test power saving hardware	1.1 Arrange access to site according to required procedure 1.2 Assess extent of system implementation using feasibility report and organisational guidelines 1.3 Produce report to meet client and organisational requirements

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	1.4 Liaise with appropriate person to obtain approval for plans with recommendations 1.5 Determine and source power saving hardware components according to agreed plan
2. Install, test and evaluate power saving hardware	2.1 Install and configure components according to work health and safety (WHS) and environmental requirements, plan, and manufacturer's and industry standards 2.2 Resolve identified problems 2.3 Test and enhance system performance to meet organisational requirements
3. Complete documentation and clean up worksite	3.1 Produce evaluation report on actual cost and benefits of implementing power saving hardware in organisation 3.2 Provide support manual for client 3.3 Record all test results and records for client 3.4 Restore any changes made to worksite to client's satisfaction and obtain sign off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1, 1.2, 1.5, 2.1, 2.3	• Identifies, analyses and evaluates complex text to determine legislative, regulatory, technical and business requirements, and to confirm requirements
Writing	1.3, 1.4, 3.1-3.3	• Prepares reports, design solutions and recommendations that convey an understanding of outcomes and alternatives, and uses terminology appropriate to present to relevant personnel
Oral Communication	1.4	• Articulates clearly using specific language suitable for technical, operational and business audiences to convey requirements • Uses listening and questioning techniques to confirm understanding
Numeracy	3.1	• Analyses numerical information to assess cost

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		and benefits of power saving hardware
Navigate the world of work	1.1, 1.2, 2.1, 2.3	• Recognises and responds to both explicit and implicit organisational procedures and protocols, and legislative and regulatory requirements
Interact with others	3.4	• Selects appropriate communication protocols in a range of work contexts
Get the work done	1.1, 1.5, 2.1-2.3	• Develops plans for complex activities with strategic implications • Systematically gathers and analyses all relevant information and evaluates options to make informed decisions • Uses a range of digitally based technology and applications to access and filter data, and extract, organise, integrate and share relevant information in effective ways • Recognises and takes responsibility for addressing predictable and some less predictable problems in familiar work contexts

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTSUS402 Install and test power saving hardware	ICTSUS4184A Install and test power saving hardware	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSUS402 Install and test power saving hardware

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- determine and meet client requirements for installation and testing of power saving hardware
- plan and connect the hardware components according to vendor and technical specifications.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe systems diagnostic features
- outline business processes
- summarise client business domain, business function and organisation
- discuss compatibility issues and resolution procedures
- describe the process of configuration of internet protocol (IP) networks
- identify current industry accepted hardware products
- describe the major components of client and business liaison
- explain how to document technical specifications
- discuss linkage between processes
- identify set up and configuration procedures
- outline technologies such as:
  - areas of the hardware relevant to configuration and testing
  - installation procedures
  - power saving hardware functionality

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- explain vendor specifications and requirements for component installation.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – sustainability field of work and include access to:

- a site on which energy saving solutions can be implemented
- power saving hardware currently used in industry
- relevant documentation, feasibility studies, equipment manuals and other site-related documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSUS403 Install and test power management software

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to select, install and test power management software in network elements.

It applies to individuals who usually operate with a degree of autonomy, but may also supervise the work of others in the information and communications technology (ICT) industry.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – sustainability

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan to install power management software	1.1 Arrange access to work site according to required procedure 1.2 Assess extent of software implementation using feasibility report and organisational guidelines 1.3 Liaise with appropriate person to obtain approval for plans 1.4 Determine and source new software required

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2. Install software	2.1 Bench test software for performance 2.2 Install and configure software according to work health and safety (WHS) and environmental requirements, plan, installation procedures and organisational requirements 2.3 Resolve identified technical problems
3. Complete documentation and sign off procedures	3.1 Document installation and configuration process according to organisational guidelines 3.2 Provide user documentation 3.3 Notify client and obtain sign off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1, 1.2, 2.2, 3.1	• Identifies, analyses and evaluates technical installation manuals and other text to determine legislative, regulatory and technical requirements
Writing	1.3, 3.1-3.3	• Prepares reports that convey an understanding of outcomes and alternatives, and uses terminology appropriate to present to relevant personnel
Oral Communication	1.3, 3.3	• Articulates clearly using specific language suitable for technical, operational and business audiences to convey requirements • Uses listening and questioning techniques to confirm understanding
Navigate the world of work	1.1, 1.2, 2.2, 3.1	• Recognises and responds to both explicit and implicit organisational procedures and protocols, and legislative and regulatory requirements
Interact with others	3.3	• Selects the appropriate form, channel and mode of communication for a specific purpose relevant to own role
Get the work done	1.1, 1.2, 1.4, 2.1-2.3	• Develops plans to manage relatively complex, non-routine tasks with an awareness of how they may contribute to

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		longer term operational and strategic goals • Systematically gathers and analyses all relevant information and evaluates options to make informed decisions • Reflects on the ways in which digital systems and tools are used or could be used to achieve work goals, and recognises strategic and operational applications • Recognises and takes responsibility for addressing predictable and some less predictable problems in familiar work contexts

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTSUS403 Install and test power management software	ICTSUS4185A Install and test power management software	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSUS403 Install and test power management software

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- clarify and meet client requirements for installation and testing of power management software
- plan and connect the software components according to vendor and technical specifications across a variety of situations.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify areas of the hardware relevant to configuration and testing
- explain current industry-accepted software products, with general features and capabilities
- summarise appropriate installation procedures
- outline work health and safety (WHS) requirements in relation to work safety, environmental factors and ergonomic considerations
- explain power saving software functionality
- describe set up and configuration procedures
- discuss systems diagnostic features
- explain vendor specifications and requirements for component installation.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – sustainability field of work and include access to:

- a site on which energy saving solutions can be implemented
- power saving hardware currently used in industry
- relevant documentation, feasibility studies, equipment manuals and other site-related documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSUS404 Install thin client applications for power over ethernet

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to set up energy and cost efficient installations to meet sustainability targets by remotely feeding power over ethernet (PoE).

It applies to individuals with a range of telecommunication skills who install and configure thin client applications to enable PoE on a low powered workstation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – sustainability

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan to install thin client applications	1.1 Assess extent of applications to be implemented using feasibility report and organisational guidelines 1.2 Highlight issues associated with adoption of Web 2.0 applications 1.3 Produce implementation plan and present to client 1.4 Liaise with appropriate person to obtain approval for plans with any

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	recommendations 1.5 Notify client for site access
2. Evaluate appropriate applications	2.1 Develop criteria for Web 2.0 applications to satisfy enterprise needs 2.2 Test and evaluate Web 2.0 applications according to agreed criteria 2.3 Present findings to client with recommendations on Web 2.0 applications
3. Install hardware components and applications	3.1 Follow work health and safety (WHS) and environmental requirements according to plan and manufacturer's specifications 3.2 Develop implementation plans with prioritised tasks and contingency arrangements for minimum disruption to client 3.3 Install hardware components and thin client software needed for work according to network and organisational requirements 3.4 Bench test performance of applications 3.5 Resolve identified problems
4. Complete work and document activities	4.1 Document installation and integration process according to organisational guidelines 4.2 Provide user documentation 4.3 Notify client and obtain sign off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1, 2.2, 3.1, 3.3, 4.1	• Identifies, analyses and evaluates technical installation manuals and other text to determine regulatory and technical requirements
Writing	1.3, 1.5, 2.1, 2.3, 3.2, 4.1-4.3	• Prepares reports and design solutions in required formats that convey an understanding of outcomes and alternatives and uses terminology appropriate to present to relevant personnel
Oral Communication	1.3-1.5, 2.3, 4.3	• Articulates clearly using specific language suitable for technical, operational and business audiences to convey requirements • Uses listening and questioning techniques to

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		confirm understanding
Navigate the world of work	1.1, 3.1, 3.3, 4.1	• Recognises and responds to both explicit and implicit organisational procedures and protocols, and legislative and regulatory requirements
Interact with others	2.3, 4.3	• Selects the appropriate form, channel and mode of communication for a specific purpose relevant to own role
Get the work done	1.1, 1.2, 2.1, 2.2, 3.3-3.5	• Develops plans to manage relatively complex, non-routine tasks with an awareness of how they may contribute to longer term operational and strategic goals • Takes responsibility for own workload, negotiating some key aspects with others • Systematically gathers and analyses all relevant information and evaluates options to make informed decisions • Understands key principles and concepts underpinning the design and operation of digital systems and tools, and applies these when troubleshooting existing technology and when seeking to understand the potential of new technology • Recognises and takes responsibility for addressing predictable and some less predictable problems in familiar work contexts

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTSUS404 Install thin client applications for power over ethernet	ICTSUS4186A Install thin client applications for power over ethernet	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSUS404 Install thin client applications for power over ethernet

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- determine and meet client requirements for thin client applications
- install and configure components according to vendor and technical specifications.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline why businesses use thin technologies
- explain client business domain, business function and organisation
- summarise compatibility issues and resolution procedures
- explain the configuration of internet protocol (IP) networks
- discuss the importance of client and business liaison
- explain how to document technical specifications
- summarise linkage between processes
- explain set up and configuration procedures
- discuss systems diagnostic features
- explain Web 2.0 including:
  - applications and functionality
  - areas of the Web 2.0 relevant to configuration and testing
  - current industry accepted Web 2.0 products
  - vendor specifications and requirements for Web 2.0 applications
  - Web 2.0 application procedures.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – sustainability field of work and include access to:

- a site on which remote power feeding applications can be implemented
- relevant documentation, feasibility studies and equipment manuals.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSUS501 Implement server virtualisation for a sustainable ICT system

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to install and integrate a virtual server in a network to replace multiple physical servers, reducing power requirements of individual servers and meeting sustainability targets.

It applies to individuals with a high level of specialist technical skills and knowledge in telecommunications and information and communications technology (ICT) networks using internet protocol (IP) systems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – sustainability

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan to implement server virtualisation	1.1 Assess extent of virtualisation to be implemented using feasibility report and organisational guidelines 1.2 Analyse existing server infrastructure use 1.3 Research and analyse alternative virtualisation scenarios, including

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	risk analysis and relative comparisons of each consideration 1.4 Provide brief report to appropriate person of proposed preferred plan and describe resources required 1.5 Liaise with appropriate person to obtain approval for plans with any recommendations
2. Design virtual server specification	2.1 Confirm network operating system, server applications and server design with client 2.2 Determine product and vendor architecture and equipment specifications 2.3 Determine technology and resources within business requirements and budget
3. Install virtual server	3.1 Follow work health and safety (WHS) and environmental requirements according to plan and manufacturer's specifications 3.2 Notify client for site access 3.3 Create detailed task list specifying stages and sequence of work required 3.4 Review hardware and software to ensure compatibility 3.5 Install required operating system, additional tools or third party software as specified in design 3.6 Patch operating system and applications to ensure maximum security and reliability
4. Integrate and test virtual server	4.1 Determine tests to ensure virtual server integration 4.2 Develop test plan, referring to resources and network impact 4.3 Run system tests according to test plan and record outcomes 4.4 Analyse error report and make changes as required 4.5 Test required changes or additions 4.6 Validate changes or additions against specifications
5. Complete work and document activities	5.1 Document installation and integration process according to organisational guidelines 5.2 Provide user documentation 5.3 Notify client and obtain sign off

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.3, 3.5, 4.3, 4.6, 5.1	• Identifies, analyses and evaluates technical installation manuals and other text to determine regulatory and technical requirements
Writing	1.4, 1.5, 2.1, 3.2, 3.3, 4.2, 4.3, 5.1-5.3	• Prepares reports and design solutions in required formats for diverse audiences that convey an understanding of outcomes and alternatives, and uses terminology appropriate to present to relevant personnel
Oral Communication	1.5, 2.1, 3.2, 5.3	• Articulates clearly using specific language suitable for technical, operational and business audiences to convey requirements • Uses listening and questioning techniques to confirm understanding
Numeracy	2.3	• Calculates equipment costs with reference to budgetary constraints
Navigate the world of work	1.1, 3.1	• Recognises and responds to both explicit and implicit organisational procedures and protocols, and legislative and regulatory requirements, with specific reference to safety
Interact with others	5.3	• Selects the appropriate form, channel and mode of communication for a specific purpose relevant to own role
Get the work done	1.1-1.3, 2.2, 2.3, 3.3-3.6, 4.1-4.6	• Develops plans to manage relatively complex, non-routine tasks with an awareness of how they may contribute to longer term operational and strategic goals • Takes responsibility for own workload, negotiating some key aspects with others • Systematically gathers and analyses all relevant information and evaluates options to make informed decisions • Understands key principles and concepts underpinning the design and operation of digital systems and tools, and applies these when troubleshooting existing technology and when seeking to understand the potential of new technology • Uses analytical processes to decide on a course of

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		action, establishing criteria for deciding between options

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTSUS501 Implement server virtualisation for a sustainable ICT system	ICTSUS5187A Implement server virtualisation for a sustainable ICT system	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSUS501 Implement server virtualisation for a sustainable ICT system

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- communicate with clients for business purposes
- determine and meet client requirements for installation and testing a virtual server
- install, integrate and test virtualisation components according to vendor and technical specifications.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain client business domain, business function and organisation
- summarise compatibility issues and resolution procedures
- describe configuration of internet protocol (IP) networks
- identify current industry-accepted products
- describe the process of documenting technical specifications
- outline linkage between processes
- discuss systems diagnostic features
- summarise the following technologies:
  - power supply requirements and management
  - registered random access memory (RAM)
  - server design and network architecture
  - set up and configuration procedures
  - single and multiple processors
  - vendor specifications and requirements for software installation

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- virtual server functionality.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – sustainability field of work and include access to:

- a site and equipment on which servers can be virtualised
- server virtualisation currently used in industry
- relevant documentation, feasibility studies, equipment manuals and other site-related documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSUS601 Integrate sustainability in ICT planning and design projects

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to integrate sustainability concepts and policies into information and communications technology (ICT) planning and design projects. These projects typically involve upgrades of equipment hardware and software or new installations of next generation networks (NGN) using emerging technologies.

It applies to individuals who have high level specialist technical skills and knowledge in optical communications and IT networks using internet protocol (IP) systems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – sustainability

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to integrate sustainability into planning and	1.1 Evaluate suitable ICT projects into which sustainability can be integrated 1.2 Negotiate with stakeholders to establish extent to which

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design stages of ICT project	sustainability is to be integrated 1.3 Research and identify suitable technology solutions applicable to project 1.4 Gather power consumption data on ICT equipment required for energy audit based on agreed standard
2. Devise strategies for incorporating sustainability into ICT project	2.1 Determine and oversee implementation of short term technology solutions to achieve reduction of power consumption 2.2 Initiate and progress sustainable management principles that result in reduced environmental impact 2.3 Establish, regularly review and improve key performance indicators (KPI) on sustainability performance 2.4 Incorporate innovative planning and design rules for ICT projects that foster sustainability and environmental best practice
3. Analyse energy audit data	3.1 Identify energy usage within scope of ICT project and provide detailed report 3.2 Estimate potential energy savings and payback periods for recommended actions 3.3 Estimate carbon dioxide (CO^2) emissions for nominated project 3.4 Evaluate estimated CO^2 emissions with comparable benchmarks 3.5 Make recommendations in order of priority and give estimates of implementation costs on integration of sustainability for other ICT projects

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.4, 2.3	• Gathers, interprets and analyses a range of complex textual information from a range of sources and identifies relevant and key information
Writing	1.2, 3.1, 3.5	• Records technical requirements and procedures for diverse audiences using precise language and specialised terminology to convey an understanding of outcomes and alternatives

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Oral Communication	1.1, 1.2	• Clearly articulates and validates policy and strategy benefits for project requirements using specific language suitable for different audiences to convey requirements • Uses listening and questioning techniques to confirm understanding • Effectively negotiates contracts with suppliers
Numeracy	2.3, 3.1-3.5	• Uses complex mathematical formulae to estimate CO^2 emissions, analyse and confirm capacity requirements and plan budgetary and workforce needs
Get the work done	1.1, 1.3, 1.4, 2.1, 2.3, 2.4, 3.1-3.3, 3.5	• Develops plans to manage relatively complex, non-routine tasks with an awareness of how they may contribute to longer term operational and strategic goals • Takes responsibility for own workload, negotiating some key aspects with others • Systematically gathers and analyses all relevant information and evaluates options to make informed decisions • Reflects on the ways in which digital systems and tools are used or could be used to achieve work goals, and recognises strategic and operational applications • Uses analytical processes to decide on a course of action, establishing criteria for deciding between options

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTSUS601 Integrate sustainability in ICT planning and design projects	ICTSUS6233A Integrate sustainability in ICT planning and design projects	Updated to meet Standards for Training Packages	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSUS601 Integrate sustainability in ICT planning and design projects

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- plan and integrate sustainability into information and communications technology (ICT) projects by devising strategies to conserve resources
- analyse energy audit data on enterprise resource consumption
- develop and monitor policies for review and improvements, benchmarking against industry best practice and attempting new approaches continuously over time.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- discuss best practice approaches relevant to own work area
- explain environmental or sustainability legislation, regulations and codes of practice applicable to the industry and organisation
- discuss and explain work health and safety (WHS) implications for new policy
- explain how to estimate CO^2 emissions
- summarise ICT power consumption calculations
- discuss policy development processes and practices
- summarise power consumption audit methodology
- identify principles, practices and available tools and techniques of sustainability management relevant to the telecommunications industry
- describe quality assurance systems relevant to own organisation
- summarise systems and procedures to aid in the achievement of workplace sustainability.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – sustainability field of work and include access to:

- sites on which planning, design and integration of sustainability may be carried out
- relevant legislation, standards, guidelines, reports and equipment specifications and drawings
- a range of workplace documentation, personnel, information and resources including:
  - compliance obligations
  - organisational plans.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSUS602 Establish a business case for sustainability and competitive advantage in ICT projects

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to seek business advantages by developing innovative and sustainable solutions in information and communications technology (ICT) project plans.

It applies to individuals who prepare planning, cost-benefit analysis and return on investment for the implementation of sustainable schemes at the enterprise level and who work with high-level specialist training skills and knowledge in optical telecommunications and IT networks using internet protocol (IP) systems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – sustainability

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare information for establishing a	1.1 Evaluate proposed ICT project to determine scope and potential of sustainability integration

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business case	1.2 Research appropriate sources of information relevant to project to prepare business case 1.3 Analyse and evaluate expected goals of project and relate business case to broader organisational goals 1.4 Identify and consult with stakeholders to plan and validate options 1.5 Identify and report on any assumptions and known constraints that can impact on project
2. Produce business case for ICT sustainability project	2.1 Evaluate critical success factors to determine vital strategy for project to successfully implement sustainability and gain competitive advantage 2.2 Prepare cost-benefit analysis and estimate overall benefit obtained by introducing or improving sustainability in project 2.3 Prepare estimate of costs over appropriate time period and determine potential of return on investment (RoI) 2.4 Evaluate and analyse alternative options to determine benefits, disadvantages, costs and risks
3. Produce business case documentation	3.1 Validate options with stakeholders and determine recommended option 3.2 Prepare implementation plan for recommended option for ICT project 3.3 Produce executive summary of proposal, including consequences of not implementing sustainability activity

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.2, 1.3, 2.1	• Analyses and evaluates complex textual information to determine technical solutions and to evaluate the benefits of improving or introducing sustainability
Writing	1.4, 1.5, 2.2, 2.3, 3.1-3.3	• Prepares a business case for diverse audiences using precise language and specialised terminology to convey an understanding of outcomes and alternatives • Uses specific language to record technical requirements and procedures
Oral	1.1, 1.4, 1.5,	• Clearly articulates and validates policy and strategy

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Communication	3.1	benefits for project requirements using specific language suitable for different audiences to convey requirements • Uses listening and questioning techniques to confirm understanding
Numeracy	2.2-2.4	• Uses mathematical formulae to analyse and confirm capacity requirements and to plan budgetary and workforce needs
Navigate the world of work	1.3	• Recognises and responds to both explicit and implicit organisational procedures and protocols
Get the work done	1.1-1.3, 1.5, 2.1, 2.2, 2.4	• Develops plans to manage relatively complex, non-routine tasks with an awareness of how they may contribute to longer term operational and strategic goals • Takes responsibility for own workload, negotiating some key aspects with others • Systematically gathers and analyses all relevant information and evaluates options to make informed decisions • Understands key principles and concepts underpinning the design and operation of digital systems and tools, and applies these when seeking to understand the potential of new technology • Uses analytical processes to decide on a course of action, establishing criteria for deciding between options

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTSUS602 Establish a business case for sustainability and competitive advantage in ICT projects	ICTSUS6234A Establish a business case for sustainability and competitive advantage in ICT projects	Updated to meet Standards for Training Packages	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSUS602 Establish a business case for sustainability and competitive advantage in ICT projects

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- demonstrate a measurable improvement of a business through the implementation of a chosen strategy using benchmark indicators
- communicate effectively with stakeholders on approaches to sustainability improvements, development and implementation, and contribute to resolution of disputes among stakeholders
- use software systems for recording and filing documentation, measuring current usage, and interpreting all visual data and information
- identify improvements and benchmarks against industry best practice by continuously reviewing and improving policies over time.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- summarise best practice approaches relevant to sustainability
- discuss environmental and sustainability legislation, regulations and codes of practice applicable to the industry and organisation
- describe equal employment opportunity, equity and diversity principles and work health and safety (WHS) implications of policy being developed
- explain policy development processes and practices
- outline principles, practices and available tools and techniques of sustainability management relevant to the information and communications technology (ICT) industry
- elucidate quality assurance systems relevant to own organisation
- discuss relevant industry competency

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- evaluate relevant organisational policies, procedures and protocols as they relate to sustainability
- summarise relevant systems and procedures to aid in the achievement of workplace sustainability
- explain how to calculate ICT power consumption
- discuss energy consumption and energy audit methodology
- summarise the environmental impacts of products, processes, systems and services.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – sustainability field of work and include access to:

- sites on which preparation of a business case for introducing or improving sustainability in an ICT project may be carried out
- relevant legislation, standards, guidelines, reports, and equipment specifications and drawings
- a range of workplace documentation and personnel information and resources, such as compliance obligations, organisational plans and work responsibilities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSUS804 Use ICT to improve sustainability outcomes

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to use ICT tools and technologies to improve sustainability outcomes for a range of industries through monitoring and reporting on greenhouse gas emissions.

It applies to individuals with a high level of autonomy who are excellent communicators with telecommunications and systems skills and management abilities.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Sustainability

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Design and manage a sustainability audit	1.1 Use audit tool that reflects criteria of benchmark, nature of risks, relevant information and data types, evaluation of performance and legislative requirements 1.2 Define scope, objectives and benchmarks for audit in consultation with relevant stakeholders 1.3 Document requirements for audit resources, timing, schedule and responsibilities consistent with industry best practice and

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ELEMENT	PERFORMANCE CRITERIA
	relevant standards 1.4 Ensure collection strategies are objective and systematic, and that information and data is valid and reliable 1.5 Report outcomes clearly and concisely, including benefits to be achieved by adoption of audit recommendations
2. Monitor energy consumption and emissions	2.1 Analyse requirements of National Greenhouse and Energy Reporting System (NGERS) and other relevant legislation and industry standards in relation to a range of industries and needs of specific organisations 2.2 Identify links with functional areas and environmental management systems to ensure comprehensive information and data collection 2.3 Determine hardware and software required for collecting, collating, analysing and reporting emissions-related information and data 2.4 Factor requirement for an external audit into the monitoring proposal 2.5 Critically evaluate energy consumption and emissions data 2.6 Develop improvement strategies based on review of data 2.7 Use industry best practice as quality benchmark
3. Develop ICT solutions to improve sustainability outcomes	3.1 Research and analyse mitigation and adaptation strategies appropriate for a range of industries 3.2 Benchmark and document performance expectations in consultation with relevant stakeholders 3.3 Develop and document technical specifications including hardware, software, networking, interface and security and hazard management requirements 3.4 Determine timelines, resources and costs for implementation and ongoing monitoring and maintenance 3.5 Analyse impact of ICT solution in relation to performance benchmarks 3.6 Analyse opportunities and develop recommendations to improve sustainability of enterprise products, services and processes 3.7 Present report for client sign-off

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 2.1, 2.2, 2.5-2.7, 3.3	• Identifies, analyses and evaluates complex textual information to inform sustainability solutions
Writing	1.2, 1.3, 1.5, 2.4, 2.6, 3.2, 3.3, 3.6, 3.7	• Produces detailed reports and related documentation and develops recommendations using precise language and specialised terminology to convey understanding of outcomes
Oral Communication	1.2, 1.5, 3.2, 3.7	• Articulates clearly using specific language suitable to client and stakeholder audiences to convey requirements, and uses listening and questioning techniques to confirm understanding
Numeracy	1.1, 2.5, 3.4	• Uses mathematical formulae to plan budgetary requirements and evaluate timelines for solution implementation and ongoing monitoring requirements • Interprets complex energy consumption and emissions data to identify workplace improvements
Navigate the world of work	1.1, 1.3, 2.1	• Recognises and responds to both explicit and implicit organisational procedures and protocols and legislative/regulatory requirements
Get the work done	1.1-1.4, 2.2, 2.3	• Develops flexible plans for complex, high impact activities with strategic implications involving diverse stakeholders with potentially competing demands • Takes responsibility for defining key aspects of own workload, balancing own needs and priorities with those of the work group • Systematically gathers and analyses all relevant information and evaluates options to make high-impact and informed decisions • Considers strategic and operational potential of digital trends to achieve work goals, enhance work processes, create opportunities and reduce risks

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Unit Mapping Information

Code and title **current version**	**Code and title** **previous version**	**Comments**	**Equivalence status**
ICTSUS804 Use ICT to improve sustainability outcomes	ICTSUS7235A Use ICT to improve sustainability outcomes	Updated to meet Standards for Training Packages. Recoded and minor changes to PC's to meet AQF requirements.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSUS804 Use ICT to improve sustainability outcomes

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- audit and critically analyse patterns of energy use
- develop monitoring and reporting systems that comply with regulatory requirements
- develop a workable implementation strategy
- formulate solutions to improve sustainability outcomes
- develop benchmarks for reviewing and improving performance.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain auditing sustainability processes and practices
- discuss corporate social responsibility
- describe development processes and practices
- clarify hazard identification and control
- explain industry standards
- discuss the legislative framework underpinning sustainability
- summarise principles, practices and available tools and techniques of sustainability management relevant to a range of industries
- outline relevant international business and organisational standards
- discuss sustainability from a local, national and international perspective
- summarise sustainability including ecological, economic and social issues
- discuss technical performance measurements.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications – Sustainability industry and include access to:

- relevant reports, legislation, regulations and standards
- suitable hardware, software, resources and equipment
- internet connection with suitable bandwidth
- relevant documentation including manufacturers' technical specifications.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSUS805 Manage improvements in ICT sustainability

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to improve energy conservation and energy efficiency in information and communications technology (ICT) operations and to encourage changing user behaviour.

It applies to individuals who work in a managerial capacity with a high degree of autonomy and high level of responsibility with excellent communication skills, high level technical management abilities and a broad knowledge of the design of system networks. In this role, individuals research and analyse network management databases, plan changes, diagnose and fix network problems, and report outcomes.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – sustainability

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Critically analyse organisation's	1.1 Audit and assess level and type of use across range of ICT devices, infrastructure and software 1.2 Audit and establish baselines of ICT energy consumption and other

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ICT assets energy footprint	elements contributing to organisation's carbon footprint 1.3 Assess ICT usage in relation to its contribution to organisation's business goals and priorities 1.4 Determine critical issues for organisation relevant to ICT usage and carbon footprint 1.5 Assess current ICT usage in relation to sustainable asset management 1.6 Apply industry best practice where appropriate
2. Develop ICT sustainability strategies and policy	2.1 Include goals for reduction of sustainability impacts and equipment life cycle management approaches in organisational policy 2.2 Check policy scope is consistent with industry standards and benchmarks, and amend where necessary 2.3 Ensure policy reflects organisation's commitment to sustainability as integral part of business planning and business opportunity 2.4 Consult with stakeholders as integral part of policy development, implementation and review processes 2.5 Recommend policy options based on effectiveness, timeframes and cost 2.6 Develop and produce strategies for implementation, monitoring, review and audit as part of policy documentation
3. Formulate technical and behavioural solutions to improve ICT sustainability	3.1 Determine and document hardware, software, network and interface requirements of solutions 3.2 Develop strategies to improve sustainability outcomes, including energy efficiency and alternative energy sources 3.3 Develop guidelines for improving sustainability through asset management 3.4 Document requirements, resource allocations, training needs, hazard controls and implementation timelines for selected strategies, and obtain sign off from relevant stakeholders
4. Monitor and evaluate sustainability data	4.1 Develop criteria for measuring performance improvement 4.2 Identify trends that may indicate need for remedial action and use to promote continuous improvement of performance 4.3 Modify policy and technical solutions in response to data analysis, to ensure improvements are made 4.4 Determine scope, frequency and method of monitoring and reporting in consultation with stakeholders 4.5 Review data to ensure compliance with management of sustainability and legislative requirements 4.6 Document findings and present to stakeholders

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.4, 2.2, 2.3, 2.6, 3.2, 4.2, 4.3, 4.5	• Identifies, analyses and evaluates complex textual information from a range of sources and identifies relevant and key information
Writing	1.2, 2.1, 2.4-2.6, 3.1-3.4, 4.1, 4.3, 4.4, 4.6	• Produces detailed well-structured reports and related documentation, and develops recommendations using precise language and specialised terminology to convey an understanding of outcomes
Oral Communication	2.4, 3.4, 4.4, 4.6	• Articulates clearly using specific language suitable for clients and stakeholder audiences to convey requirements • Uses listening and questioning techniques to confirm understanding
Numeracy	2.5, 3.4	• Uses mathematical formulae to determine resource requirements and evaluate workable timelines
Navigate the world of work	2.1-2.3, 4.5	• Recognises and responds to both explicit and implicit organisational procedures and protocols, and legislative and regulatory requirements
Interact with others	4.6	• Demonstrates sophisticated control over oral, visual and/or written formats, drawing on a diverse range of communication practices to achieve goals
Get the work done	1.1-1.6, 2.1, 2.6, 3.1-3.4, 4.1-4.3	• Develops flexible plans for complex, high impact activities, with strategic implications that involve a diverse range of stakeholders with potentially competing demands • Takes responsibility for defining key aspects of own workload, balancing own needs and priorities with those of the work group • Systematically gathers and analyses all relevant information and evaluates options to make high-impact and informed decisions • Considers the strategic and operational potential of digital trends to achieve work goals, enhance work processes, create opportunities and reduce risks • Uses formal analytical and lateral thinking techniques for identifying issues, and generating and

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		evaluating possible solutions

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTSUS805 Manage improvements in ICT sustainability	ICTSUS7236A Manage improvements in ICT sustainability	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSUS805 Manage improvements in ICT sustainability

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- analyse patterns of information and communications technology (ICT) use
- develop policy that complies with regulatory requirements
- develop a workable implementation strategy
- formulate solutions to reduce ICT based emissions
- develop measurable criteria for reviewing improvement.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- discuss energy efficiency and alternative energy sources
- assess the risks, hazards and controls associated with sustainable improvements in ICT
- outline industry standards
- explain the following aspects of IT:
  - hardware
  - interfacing
  - networking
  - software
- describe the legislative framework underpinning sustainability
- explain policy development processes and practices
- summarise principles, practices and available tools and techniques of sustainability management in the ICT industry
- outline relevant International Organization for Standardization (ISO) standards

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- discuss sustainability from a local, national and international perspective
- summarise sustainability including ecological, economic and social issues.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – sustainability field of work and include access to:

- relevant government and scientific reports
- conference papers
- vendor white papers
- resources, tools and networking equipment
- suitable hardware and software
- suitable bandwidth for internet connections
- relevant legislation and regulations
- manufacturers' technical specifications
- relevant ISO standards.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSUS806 Lead applied research in ICT sustainability

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to plan, conduct and report on applied research to influence strategic practices on information and communications technology (ICT) sustainability and outcomes within an organisational context. The unit also covers constructing an applied research strategy, using a range of applied research techniques, and analysing and presenting findings.

It applies to individuals who are in a leadership capacity and excellent innovators and communicators, with a very high level of technical management skills and knowledge of telecommunications networks and systems. In this role, individuals must be able to undertake detailed research, analysis and evaluation. Outcomes and solutions must be presented with clarity.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – sustainability

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Provide	1.1 Provide vision for applied research strategy to meet sustainability

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direction for development of applied research strategy for ICT sustainability	requirements of identified research purpose 1.2 Clarify and confirm applied research purpose and needs of target group 1.3 Facilitate development of policies and procedures in relation to conducting applied research for enterprise 1.4 Guide development of mechanisms for collecting and maintaining data in systematic manner 1.5 Review factors affecting reliability and validity of data 1.6 Review relevant research ethics and codes of conduct
2. Control use of range of applied research techniques and resources	2.1 Review and evaluate range of applied research methods and theories, and data collection techniques 2.2 Guide selection of appropriate methods to gather and analyse data on sustainability relevant to research project 2.3 Authorise access to appropriate sources of information relevant to research project 2.4 Select sustainable management principles that will have most sustainable impact on project 2.5 Ensure relevance of research through integrity of data collected and analysis tools used
3. Promote findings	3.1 Ensure accuracy of data and research details, and adherence to any legal requirements 3.2 Evaluate relevance of collated and analysed data against original applied research strategy 3.3 Evaluate impact of findings 3.4 Recommend implementation strategies 3.5 Ensure documentation and presentation of research findings is in clear and logical manner consistent with audience needs 3.6 Identify need for and appropriate approach to further research 3.7 Promote research findings and approach to further research

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.5, 1.6, 2.1-2.3, 2.5, 3.1-3.3	• Identifies, analyses and evaluates complex information and formal documentation, including legislative frameworks and technical solutions
Writing	1.2, 2.3, 3.4, 3.5, 3.7	• Produces complex, detailed and well-structured reports, procedures and related technical documentation using specific language and specialised terminology to convey an understanding of outcomes
Oral Communication	1.2, 2.3, 3.4, 3.5, 3.7	• Articulates clearly and creatively, using specific language suitable for clients and stakeholder audiences to convey requirements • Uses listening and questioning techniques to confirm understanding
Numeracy	1.4, 1.5, 2.2, 3.2	• Uses mathematical formulae to determine CO^2 emissions and carbon footprint • Performs complex statistical analysis
Navigate the world of work	1.6, 3.1	• Recognises and responds to both explicit and implicit organisational procedures and protocols • Monitors adherence to legal and regulatory rights and responsibilities for self and possibly for others
Get the work done	1.1-1.5, 2.1, 2.2, 2.4, 2.5, 3.1-3.5	• Develops flexible plans for complex, high impact activities with strategic implications that involve a diverse range of stakeholders with potentially competing demands • Takes responsibility for defining key aspects of own workload, balancing own needs and priorities with those of the work group • Systematically gathers and analyses all relevant information and evaluates options to make high-impact and informed decisions • Considers the strategic and operational potential of digital trends to achieve work goals, enhance work processes, create opportunities and reduce risks • Uses a broad range of strategies to store, access and organise virtual information, recognising that design choices will influence what information is

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		retrieved and how it may be interpreted and used

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTSUS806 Lead applied research in ICT sustainability	ICTSUS8237A Lead applied research in ICT sustainability	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSUS806 Lead applied research in ICT sustainability

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- direct the formulation of a research proposal or plan that includes:
  - specific research questions on sustainability
  - valid population or sample size
  - description of the geographical, cultural, social or institutional context within which the research will be carried out
  - a full description of the data collection methods
  - analysis of the limitations to research design
- manage the design of an applied research project using appropriate tools and techniques
- design a research report with analysis of data, and valid and reliable findings
- evaluate relevance of the research results
- conduct research using recognised research techniques.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- summarise environmental and sustainability legislation, regulations and codes of practice applicable to the industry and organisation
- explain audit methodology on information and communications technology (ICT) energy, waste, product life cycles and CO^2 emissions
- discuss principles, practices and available tools and techniques of sustainability management relevant to the telecommunications industry
- describe communication processes and methods

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- explain data collection methods
- summarise legislation, regulations, policies, procedures and guidelines relating to handling or storing data, including privacy and freedom of information
- describe presentation techniques
- outline reporting methods
- discuss research ethics and codes of conduct
- summarise research tools and methods
- discuss selection of appropriate applied research techniques
- outline leadership strategies relevant to a research environment.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – sustainability field of work and include access to:

- a research activity that relates to an actual workplace or simulated context and topic
- a range of tools and techniques appropriate to the given situations and research topic.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSUS807 Conduct and manage a life cycle assessment for sustainability

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to conduct a life cycle assessment (LCA) to investigate and evaluate the human health and environmental impacts arising from the provision of a product, process or service.

It applies to individuals who are excellent communicators with a very high level of technical management skills and knowledge of telecommunications networks and systems. In this role, individuals must be able to undertake detailed research, analysis and evaluation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – sustainability

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Define and scope project goal	1.1 Access appropriate sources of information relevant to LCA project 1.2 Define goal of project 1.3 Specify information needed to inform decision makers

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	1.4 Determine required level of specificity 1.5 Determine data organisation and display of results 1.6 Define scope of study 1.7 Determine ground rules for performing the work
2. Conduct life cycle inventory (LCI)	2.1 Generate life cycle flow diagram 2.2 Develop data collection plan for LCI 2.3 Collect actual data 2.4 Evaluate and document LCI results
3. Conduct life cycle impact assessment (LCIA)	3.1 Select and define impact categories 3.2 Classify LCI results to impact categories 3.3 Model LCI impacts within impact categories using science based conversion factors 3.4 Normalise potential impacts in ways that can be compared 3.5 Assign impact categories by grouping into one or more sets to facilitate interpretation of results 3.6 Assign weighting factors to emphasise most important potential impacts
4. Interpret and evaluate results from LCI and LCIA and communicate them	4.1 Identify significant issues based on LCI and LCIA 4.2 Evaluate completeness check, consistency check and sensitivity check 4.3 Make recommendations for improving product, process or service life cycle
5. Report results of LCA study	5.1 Document results of LCA study 5.2 Finalise report with conclusion, and make recommendations as a result of LCA study

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1, 1.2, 2.4, 4.2	• Identifies, analyses and evaluates a range of

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		complex documentation, including legislative frameworks and technical specifications
Writing	1.2-1.7, 2.1, 2.2, 3.1-3.6, 4.1, 4.3, 5.1, 5.2	• Produces complex, detailed and well-structured media releases and other reports and procedures, using specific language and specialised terminology to convey an understanding of outcomes
Oral Communication	1.3, 4.3, 5.2	• Articulates clearly and creatively using specific language suitable for clients to convey requirements • Uses listening and questioning techniques to confirm understanding
Numeracy	3.6	• Uses mathematical formulae to estimate CO^2 emissions, and analyse and confirm capacity, personnel and budgetary requirements and all other incidental LCA calculations
Get the work done	1.1, 1.2, 1.4-1.7, 2.1-2.3, 3.1-3.6, 4.1, 4.2	• Develops flexible plans for complex, high impact activities with strategic implications that involve a diverse range of stakeholders with potentially competing demands • Takes responsibility for defining key aspects of own workload, balancing own needs and priorities with those of the work group • Systematically gathers and analyses all relevant information and evaluates options to make high impact and informed decisions • Considers the strategic and operational potential of digital trends to achieve work goals, enhance work processes, create opportunities and reduce risks • Uses a broad range of strategies to store, access and organise virtual information, recognising that design choices will influence what information is retrieved and how it may be interpreted and used • Uses formal analytical and lateral thinking techniques for identifying issues, and generating and evaluating possible solutions

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**

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Code and title current version	Code and title previous version	Comments	Equivalence status
ICTSUS807 Conduct and manage a life cycle assessment for sustainability	ICTSUS8238A Conduct and manage a life cycle assessment for sustainability	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTSUS807 Conduct and manage a life cycle assessment for sustainability

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- scope and define the goals of a unique life cycle assessment (LCA) for sustainability
- produce a life cycle inventory (LCI) using relevant software and data collection strategies
- use life cycle assessment and other software for researching and interpreting charts, flowcharts, graphs and other visual data and information
- evaluate LCI and life cycle impact assessment (LCIA) results, using completeness, consistency and sensitivity checks
- make best practice recommendations based on the results of the LCA study.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline best practice approaches relevant to own work area
- summarise environmental and sustainability legislation, regulations and codes of practice applicable to the industry and organisation
- outline the need to consider equal opportunity, equity and diversity principles and work health and safety (WHS) when conducting sensitivity checks for policy development
- outline policy development processes and practices
- explain principles, practices and available tools and techniques of sustainability management relevant to the telecommunications industry
- outline quality assurance systems relevant to own organisation
- discuss relevant organisational policies, procedures and protocols
- explain relevant systems and procedures to aid in the achievement of workplace sustainability

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- explain ICT power consumption calculations
- explain power consumption and energy audit methodology
- discuss estimating CO^2 emissions
- summarise environmental impacts of products, processes, systems and services.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – sustainability field of work and include access to:

- sites on which planning, design and integration of sustainability may be carried out
- relevant legislation, standards, guidelines, reports and equipment specifications and drawings
- a range of workplace documentation and personnel information and resources (such as compliance obligations, organisational plans and work responsibilities).

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTCR201 Use rigging practices and systems on telecommunications network structures

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to perform rigging work during system installations for telecommunications radio structures.

It applies to individuals who are usually highly skilled verbal and non-verbal communicators working in a team environment. They must be appropriately licensed to complete high risk work and be able to safely use all required equipment.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Unit Sector

Telecommunications – telecommunications rigging installation

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare rigging systems	1.1 Prepare for work according to relevant legislation, codes, regulations and standards 1.2 Arrange access to site and confirm client requirements 1.3 Inform appropriate personnel of existing and potential site hazards

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	1.4 Select tools and safety equipment required for safe rigging practice 1.5 Use rigging systems in telecommunications environment according to specifications 1.6 Identify proposed position of equipment to be mounted on telecommunications radio structures according to specifications and industry practice 1.7 Estimate safe working loads for rigging systems and equipment according to specifications 1.8 Select and inspect rigging equipment to ensure it is fit for purpose according to specifications
2. Set up and carry out rigging work on telecommunications radio structures	2.1 Set up rigging and dogging equipment following safe working practices and procedures according to all relevant work health and safety (WHS) legislation 2.2 Operate rigging equipment and install telecommunications antenna and associated equipment according to specifications 2.3 Use internationally recognised communication signals and protocols with crane drivers and helicopter crews according to the Crane Association Crane Safety Manual for Operators/Users
3. De-rig and complete documentation	3.1 De-rig and lower rigging equipment according to specifications 3.2 Restore site to client expectations following completion of installation according to industry practice 3.3 Complete documentation and notify client for sign off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1, 1.5-1.8, 2.1, 2.2, 3.1	• Interprets textual information from relevant sources to identify equipment suitability and adhere to procedures and standards
Writing	3.3	• Legibly completes relevant reports and documentation using clear and technically specific language
Oral	1.2, 1.3, 2.3, 3.3	• Uses listening and questioning skills to confirm understanding for requirements, participates in a

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Communication		verbal exchange of ideas and solutions, and uses appropriate, detailed and clear language to address key personnel and disseminate information
Numeracy	1.7, 3.1	• Uses mathematical formulae to estimate weights to make equipment adjustments
Navigate the world of work	1.1, 1.3, 1.5-1.8, 2.1-2.3, 3.1, 3.2	• Takes personal responsibility for adherence to legal and regulatory requirements, standards and specifications, and industry practices relevant to a rigging context, and draws attention to any issues that may affect self or others • Recognises and follows explicit and implicit protocols and meets expectations associated with own role in relation to communication signals
Interact with others	2.3, 1.3	• Cooperates with others as part of familiar routine activities, and contributes to specific activities requiring joint responsibility and accountability when reporting site hazards and communicating with crane drivers and helicopter pilots
Get the work done	1.1-1.8, 2.1-2.3, 3.1-3.3	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of the rigging context to identify relevant information and risks, and to identify and evaluate alternative strategies and resources • Uses systematic, analytical processes in rigging situations, setting goals, gathering relevant information, and identifying and evaluating options for selection of tools and safety equipment, and selection, positioning and safe loading of rigging equipment • Recognises and addresses some unfamiliar problems of increasing complexity within own scope, recognising when to seek the expertise of others in relation to selection and safe use of tools and equipment, identification of site hazards and site restoration

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTCR201 Use rigging practices and	ICTTCR2188A Use rigging practices and	Updated to meet Standards for	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
systems on telecommunications network structures	systems on telecommunications network structures	Training Packages	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTCR201 Use rigging practices and systems on telecommunications network structures

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- apply work health and safety (WHS) requirements and work practices associated with rigging
- carry out basic dogging skills
- carry out basic rigging skills
- use specialised hand or power tools and equipment normally used in rigging.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline the features and operating requirements of rigging equipment
- explain hypothermia symptoms and methods of prevention and treatment
- discuss licensing and regulatory issues applying to rigging practices and systems on telecommunications radio structures
- summarise knowledge of meteorology and weather prediction
- describe remote-area first aid
- explain:
  - electromagnetic radiation (EMR) safety practices
  - optical fibre-cabling and equipment safety practices
  - personal protective equipment for rigging projects
  - requirements of WHS legislation, relevant regulations, and applicable site and company WHS procedures
  - rigging practices and systems to telecommunications radio structures
  - working-at-heights safety practices.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – telecommunications rigging installation field of work and include access to special purpose tools, equipment and materials.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTCR202 Use operational safety in a telecommunications rigging environment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to use fall arrest, fall guarding and fall restraint when working at heights in a telecommunications rigging environment for standard telecommunications structures.

It applies to individuals who are usually highly skilled communicators working in a team environment. They must be appropriately licensed to complete high-risk work and be able to safely use all required equipment.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Unit Sector

Telecommunications – telecommunications rigging installation

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to use operational safety in telecommunications	1.1 Prepare for given work according to relevant legislation, codes, regulations and standards, and applicable to fall arrest, fall guarding and fall restraint systems

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rigging environment	1.2 Select tools and safety equipment required for safe rigging practice
2. Assess hazards associated with wearing safety equipment	2.1 Inform appropriate personnel of potential faults and non-compliances in personal equipment 2.2 Inform appropriate personnel of primary hazards associated with use of safety harness and associated equipment and control strategies
3. Check and fit safety harness	3.1 Use correct safety harness fitting method 3.2 Confirm that lanyard is appropriate for task and check lanyard and harness for faults according to manufacturer's specifications and workplace procedures 3.3 Fit safety harness according to manufacturer's instructions
4. Use a safety harness in telecommunications environment	4.1 Minimise risks to self and others while using safety harness and lanyards using identified safety principles associated with effective fall arrest, fall guarding and fall restraint systems 4.2 Confirm safety of possible hook-on points and select optimum hook-on points 4.3 Attach and detach lanyards in safe manner to and from anchor points
5. Verify rescue plan to be activated in event of a fall	5.1 Confirm rescue plan is in place with work supervisor 5.2 Notify individuals of their roles in rescue plan 5.3 Provide report to supervisor on application of operational safety in rigging practice in telecommunications environment

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1, 3.2, 3.3	• Interprets textual information from relevant sources to identify equipment suitability and adhere to procedures and standards
Writing	2.1, 2.2, 5.1-5.3	• Legibly completes relevant reports and documentation using clear and technically specific language
Oral Communication	2.1, 5.1, 5.2	• Uses listening and questioning skills to confirm understanding of requirements, participates in a verbal exchange of ideas and solutions, and uses

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		appropriate, detailed and clear language to address key personnel and disseminate information
Numeracy	1.2, 3.2	• Performs basic mathematical calculations to compare and measure equipment requirements
Navigate the world of work	1.1, 3.1-3.3, 4.1	• Takes personal responsibility for adherence to relevant legislation, codes, regulations and standards relevant to own work context, and draws attention to any issues that may affect self or others • Understands the nature and purpose of own role and associated responsibilities when using harness and lanyard, and how role contributes to the work of others in the immediate work context • Recognises and follows protocols relating to manufacturer's instructions and safety principles and practices regarding fitting and use of harness and lanyards
Interact with others	5.1-5.3	• Understands what to communicate, with whom and how in routine work situations, and is learning how to identify the requirements of less familiar contexts
Get the work done	1.1, 1.2, 2.1, 2.2, 3.2, 4.2, 4.3	• Plans a range of routine and some non-routine tasks, accepting stated goals and aiming to achieve them efficiently and safely • Selects from a range of pre-determined options in routine situations, identifying and taking some situational factors into account in relation to hazard identification and safe work practices • Recognises and takes responsibility for addressing predictable and some less predictable problems in familiar work contexts • Initiates standard procedures when responding to familiar problems within immediate context

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTCR202 Use operational safety in a telecommunications rigging environment	ICTTCR2189A Use operational safety in a telecommunications	Updated to meet Standards for Training Packages	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
	rigging environment		

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTCR202 Use operational safety in a telecommunications rigging environment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- apply all work health and safety (WHS) requirements and work practices associated with fall arrest, fall guarding and fall restraint when working at heights in a telecommunications rigging environment.
- check and fit a safety harness according to industry practice
- use a safety harness where a fall hazard exists at height in a telecommunications context
- produce a rescue plan to be activated in the event of a fall.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline electromagnetic radiation (EMR) safety practices
- discuss fall arrest, fall guarding and fall restraint when working at heights in a telecommunications rigging environment
- list features and operating requirements of rigging equipment
- identify government legislation, regulations, and by-laws relating to rigging works including:
  - applicable site and company WHS procedures
  - WHS legislation
  - relevant codes of practice
  - subsequent amendments in regards to fall arrest, fall guarding and fall restraint when working at heights in a telecommunications rigging environment
- describe hazards associated with wearing a safety harness and associated equipment

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- summarise licensing and regulatory issues applying to rigging practices and systems on telecommunications radio structures
- discuss optical fibre cabling and equipment safety practices
- identify personal protective equipment for rigging projects
- describe the rescue plan to be activated in the event of a fall
- outline risks present when working on telecommunications radio structures
- explain safe rigging practices and systems to telecommunications radio structures
- describe suspension trauma
- summarise working-at-heights safety practices
- identify workplace operational procedures.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – telecommunications rigging installation field of work and include access to special purpose tools, equipment and materials.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTCR203 Use safe rigging practices to climb and perform rescues on telecommunications network structures

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to assess risk, use rigging equipment, and climb and perform rescues on standard telecommunications network structures.

It applies to technical staff who work in a team environment and who use rigging on telecommunications radio structures and may make use of rigging plant and equipment, fall arrest, fall guarding and fall constraint.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Unit Sector

Telecommunications – telecommunications rigging installation

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to use safe rigging practices	1.1 Notify appropriate personnel and take necessary precautions to minimise, control or eliminate hazards that may exist during work activities 1.2 Prepare for given work according to minimum approach distances for hazards on telecommunications network structures, as prescribed in relevant legislation, codes, regulations and

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	standards
2. Assess status and condition of telecommunications network structures and identify climbing route	2.1 Inspect and assess status and condition of telecommunications structures, according to industry practice 2.2 Plot optimum climbing route to avoid hazards and ensure most effective use of selected equipment, according to manufacturer's instructions and industry practice
3. Prepare climbing equipment	3.1 Select climbing equipment in keeping with structures to be climbed, according to industry practice 3.2 Inspect climbing equipment for damage, according to specifications and industry practice
4. Climb telecommunications network structures	4.1 Use safe climbing practices when ascending telecommunications network structures according to work health and safety (WHS) practices 4.2 Maintain permanent attachment when more than three metres from ground, adhering to safety requirements 4.3 Maintain three points of contact at all times, according to industry practice 4.4 Manage ropes to avoid entanglement or fouling on structure 4.5 Maintain safe working and minimum approach distances from hazards on telecommunications network structures at all times, according to standards and regulations
5. Use climbing and working fall arrest systems	5.1 Perform transfers to and from climbing system and working system using fall prevention practices, according to industry practice 5.2 Use working fall arrest system, according to specifications
6. Perform rescues	6.1 Perform rescues according to situation, industry practice and local instruction 6.2 Ascertain and seek required medical treatment according to enterprise standards 6.3 Report accidents or incidents according to company procedures and local instructions

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

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Skill	Performance Criteria	Description
Reading	1.2, 2.2, 3.2, 4.1, 4.5, 5.1, 5.2	• Interprets textual information from relevant sources to identify equipment suitability and adhere to procedures and standards
Writing	1.1, 6.3	• Accurately completes relevant reports and documentation using clear and technically specific language and diagrammatic information
Oral Communication	1.1, 6.1, 6.3	• Uses listening and questioning skills to confirm understanding for requirements, and participates in a verbal exchange of ideas and solutions • Uses appropriate, detailed and clear language to address key personnel and to disseminate information
Numeracy	1.2, 4.2, 4.3, 4.5	• Uses mathematical formulae to calculate ratios and scale, make adjustments to equipment and interpret methodological information
Navigate the world of work	1.2, 2.1, 2.2, 3.1, 3.2, 4.1-4.5, 5.1, 5.2, 6.1, 6.3	• Takes personal responsibility for adherence to legal and regulatory requirements, standards, manufacturer's instructions and industry practice relevant to own work context, and draws attention to any issues that may affect self or others in relation to climbing and performing rescues
Get the work done	1.2, 2.1, 2.2, 3.1, 3.2, 4.4, 6.2	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of the climbing and rescue context to identify relevant information and risks, and to identify and evaluate alternative strategies and resources • Makes a range of critical and non-critical decisions regarding route, equipment and need for medical treatment in relatively complex climbing and rescue situations, taking a range of constraints into account • Recognises and takes responsibility for addressing predictable and some less predictable safety problems in familiar work contexts

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		• Initiates standard procedures when responding to familiar problems within immediate context • Applies formal problem-solving processes when selecting equipment and managing ropes, breaking complex issues into manageable parts and identifying and evaluating several options for action

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTCR203 Use safe rigging practices to climb and perform rescues on telecommunications network structures	ICTTCR2190A Use safe rigging practices to climb and perform rescues on telecommunications network structures	Updated to meet Standards for Training Packages Minor changes to Performance Criteria	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTCR203 Use safe rigging practices to climb and perform rescues on telecommunications network structures

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- use safe rigging practices according to all work health and safety (WHS) legislative requirements, regulations and standards
- assess the status and condition of the telecommunications structure to be climbed and plot a climbing route according to industry practice
- select climbing equipment and climb a telecommunications network structure
- work safely using climbing and working fall arrest systems
- perform rescues from telecommunications network structures to industry standards.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- discuss falls, including:
  - fall factors according to the Guidelines for the Prevention of Falls
  - fall prevention
  - fall types according to Australian Standards and regulations
- list features and operating requirements of rigging equipment
- summarise optical fibre cabling and equipment safety practices
- identify personal protective equipment for rigging projects
- summarise, in relation to radio frequency (RF) electromagnetic radiation (EMR):
  - associated risks
  - methods of detecting

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  - need to verify and maintain the EMR hazard management plan against an on-site situation
  - preparing for work at a telecommunications site with potential EMR hazards
  - reporting EMR hazards safety practices
  - sources and types of RF EMR
- discuss rescue methods and practices relevant to the rigging environment
- outline safe rigging principles
- describe suspension trauma, including:
  - cause
  - effect
  - prevention
  - treatment
- discuss, in relation to a safety harness:
  - hazards associated with wearing a safety harness
  - how to check, fit and use a safety harness
  - the types and application of different safety harnesses
- explain licensing and regulatory issues applying to rigging practices and systems on telecommunications radio structures
- outline risks present when working on telecommunications radio structures
- clarify specific WHS issues that affect rigging, including:
  - relevant regulations, and applicable site and company WHS procedures
  - rigging practices and systems for telecommunications radio structures
  - safe climbing practices, including maintaining three points of contact while climbing
  - safe working and minimum approach distances for hazards on telecommunications network structures, according to standards and regulations
  - safety requirements when working at heights according to WHS legislation.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – telecommunications rigging installation field of work and include access to special purpose tools, equipment and materials.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTCR301 Build a telecommunications radio structure

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to build a foundation, and assemble and mount a telecommunications radio structure.

It applies to individuals who have a dual specialist classification as rigger installers and who may install radio structures for Worldwide Interoperability for Microwave Access (WiMAX) wireless broadband access networks, antenna installation for radio and television broadcasting, and cellular mobile communications.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Pre-requisite Unit

ICTTCR201 Use rigging practices and systems on telecommunications network structures

ICTTCR202 Use operational safety in a telecommunications rigging environment

ICTTCR203 Use safe rigging practices to climb and perform rescues on telecommunications network structures

Unit Sector

Telecommunications – telecommunications rigging installation

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential	*Performance criteria describe the performance needed to*

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outcomes	*demonstrate achievement of the element.*
1. Prepare materials and secure site	1.1 Notify appropriate personnel and take necessary precautions to minimise, control or eliminate hazards that may exist during work activities 1.2 Determine nature and location of structure from construction design plans, relevant legislation, codes, regulations and standards 1.3 Determine materials, tools and equipment required from construction design plans 1.4 Check steel for assembly against construction design plans to ensure no parts are missing 1.5 Secure and clean site according to site security instructions for public safety
2. Construct foundations for radio structure	2.1 Locate other services according to industry practice, and arrange for relocation of services if required 2.2 Oversee excavation of foundation according to engineering specifications, and construction of foundations according to construction design plans 2.3 Install earthing according to construction design plans, enterprise work health and safety (WHS) guidelines and industry practice 2.4 Provide samples of concrete for analysis according to enterprise guidelines and manufacturer's specifications, relevant standards and regulations
3. Assemble and mount telecommunications radio structure	3.1 Select area free of interference and close to construction site suitable for structure assembly 3.2 Assemble radio structure in sections on ground according to engineering specifications, using personal protective equipment and following safety guidelines 3.3 Mount and secure preassembled sections to tower construction according to plans, specifications and enterprise WHS guidelines 3.4 Maintain vertical positioning of structure within twist tolerances during construction phase 3.5 Secure and tension guy wires according to construction design plans, enterprise WHS guidelines and industry practice
4. Complete administrative duties	4.1 Update original design plan with approved amendments and return to design section 4.2 Secure and clean up site to original condition in environmentally safe manner 4.3 Notify client and obtain sign off

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.2-1.5, 2.2-2.4, 3.2, 3.3, 3.5	• Interprets textual information from relevant sources to plan, identify all job requirements and adhere to procedures and standards
Writing	1.1, 4.1, 4.3	• Accurately completes relevant reports and documentation, using clear and technically specific language and diagrammatic information
Oral Communication	1.1, 2.1, 4.3	• Uses listening and questioning skills to confirm understanding of requirements, and participates in a verbal exchange of ideas and solutions • Uses appropriate, detailed and clear language to disseminate information
Numeracy	1.2, 2.2, 3.2-3.5	• Interprets numerical information and measures, and calculates ratios and scale
Navigate the world of work	1.2, 1.5, 2.1-2.4, 3.2-3.5	• Takes personal responsibility for adherence to legal and regulatory requirements, standards, manufacturer's guidelines and industry practice relevant to own work context, and draws attention to any issues that may affect self or others when preparing for and implementing building activities
Get the work done	1.1-1.5, 2.1-2.4, 3.1, 4.2	• Applies formal problem solving processes when tackling an unfamiliar problem in relation to equipment and logistics, breaking complex issues into manageable parts and identifying and evaluating several options for action • Takes responsibility for planning and organising own workload, identifying ways of sequencing and combining elements for greater efficiency, and considering how to link with the work of others • Applies formal processes when preparing for building, producing plans with logically sequenced steps, and reflecting awareness of

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		time and resource constraints and the needs of others in the immediate vicinity • Implements actions as per plan, making slight adjustments if necessary and addressing unexpected issues • Makes a range of critical and non-critical decisions in relatively complex building situations, taking a range of constraints into account in relation to equipment, tools and materials

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTCR301 Build a telecommunications radio structure	ICTTCR3062A Build a telecommunications radio structure	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTCR301 Build a telecommunications radio structure

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- undertake pre-construction checks to ensure a safe working environment
- construct foundations according to engineering specifications
- select site for hoisting equipment, ensuring location is safe for the operator and the construction
- preassemble the structure at ground level, ensuring completion of each assembled component
- assemble and mount a telecommunications radio structure, including temporary and permanent guy anchors
- install functional and protective earthing systems, following security and safety procedures.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- summarise the impact that weather conditions impose on the constructions and installation of telecommunications structures
- describe the safety risks associated with the installation of telecommunications equipment in remote areas including:
  - hypothermia symptoms and methods of prevention and treatment
  - electromagnetic radiation (EMR) safety practices
  - personal protective equipment for rigging projects
  - working-at-heights safety practices
- discuss the features and operating requirements of:

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  - construction equipment
  - rigging equipment
- identify the information required to build a telecommunications radio structure
- describe rigging practices and systems for telecommunications radio structures
- list legislation, codes of practice and other formal agreements that impact on the work activity
- summarise licensing and regulatory issues applying to rigging practices and systems on telecommunications radio structures
- describe manufacturer's requirements for safe operation of equipment
- discuss the following work health and safety (WHS) requirements:
  - WHS legislation and regulations
  - company procedures relating to the activity and site conditions
- discuss typical issues and challenges that can occur on an installation site.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – telecommunications rigging installation field of work and include access to special purpose tools, equipment and materials.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTCR302 Install radio plant and equipment on telecommunications structures

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to install basic telecommunications radio plant and equipment on standard telecommunications structures.

It applies to technical staff who install basic telecommunications radio plant and equipment on telecommunications structures and use rigging plant and equipment, fall arrest, fall guarding and fall constraint.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Pre-requisite Unit

ICTTCR201 Use rigging practices and systems on telecommunications network structures

ICTTCR202 Use operational safety in a telecommunications rigging environment

ICTTCR203 Use safe rigging practices to climb and perform rescues on telecommunications network structures

Unit Sector

Telecommunications – telecommunications rigging installation

Elements and Performance Criteria

Elements	Performance Criteria
Elements	*Performance criteria describe the performance needed to demonstrate*

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describe the essential outcomes	*achievement of the element.*
1. Prepare for installation of radio plant	1.1 Prepare for given work according to relevant legislation, codes, regulations and standards 1.2 Arrange access to site and discuss client requirements 1.3 Inform appropriate personnel of existing and potential site hazards 1.4 Select tools and safety equipment required for safe rigging practice 1.5 Develop installation plans in agreement with client or site supervisor 1.6 Procure materials and verify delivery against inventory according to industry practice
2. Install plant and equipment	2.1 Set up rigging equipment for safe and effective use according to specifications 2.2 Install telecommunications radio equipment and feeders according to specifications and industry practice following work health and safety (WHS) and environmental requirements 2.3 Maintain installation progress documentation according to company and client requirements
3. Assist with testing and fault finding	3.1 Assist with testing of telecommunications radio equipment mounted on telecommunications structures 3.2 Identify and locate faults by interpreting test results and rectify according to industry practice 3.3 Document test results according to specifications and client requirements
4. Clean up site and complete documentation	4.1 De-rig and lower rigging equipment according to specifications 4.2 Restore site to client expectations following completion of installation, according to industry practice 4.3 Complete documentation and notify client for sign off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**

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Reading	1.1, 1.6, 2.1, 2.2, 3.2, 3.3, 4.1, 4.3	• Interprets texts from relevant sources to plan installations, identify job requirements and adhere to procedures and standards
Writing	1.3, 1.5, 2.3, 3.3, 4.3	• Uses correct terminology, spelling and grammar when advising others of requirements • Develops and completes relevant reports and documentation using clear and technically specific language, and correctly recording numerical data and diagrammatic information
Oral Communication	1.2, 1.3, 1.5, 1.6, 4.3	• Uses listening and questioning skills to confirm understanding of requirements • Participates in a verbal exchange of ideas and solutions and uses appropriate, detailed and clear language to address key personnel and client, and to disseminate information
Numeracy	1.5, 1.6, 2.1, 2.2, 3.2	• Uses mathematical formulae to take accurate measurements and to interpret technical data, and when purchasing supplies and creating supply lists
Navigate the world of work	1.1, 1.6, 2.1-2.3, 3.2, 3.3, 4.1, 4.2	• Takes personal responsibility for adherence to legal and regulatory requirements, standards, specifications and industry practice relevant to own work context, and draws attention to any issues that may affect self or others in relation to radio installations, de-rigging and site restoration
Get the work done	1.1-1.6, 3.1, 3.2	• Plans and implements a range of routine and some non-routine radio installation tasks, accepting stated goals and aiming to achieve them efficiently and safely • Uses systematic, analytical processes when assisting with testing, setting goals, gathering relevant information, and identifying and evaluating options against agreed criteria • Recognises and anticipates an increasing range of familiar problems, their symptoms and causes, actively looking for early warning signs and implementing contingency plans

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTTCR302 Install radio plant and equipment on telecommunications structures	ICTTCR3191A Install radio plant and equipment on telecommunications structures	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTCR302 Install radio plant and equipment on telecommunications structures

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- install basic telecommunications radio plant and equipment according to job specifications and all work health and safety (WHS) legislation, regulations, standards and environmental requirements
- assist with testing and fault-finding basic telecommunications radio plant and equipment mounted on telecommunications structures
- use effective communications skills related to:
  - dogging
  - work associates
  - supervisors
  - team members
  - enterprise documentation.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline antenna principles
- outline the features and operating requirements of rigging equipment
- discuss relevant regulations and typical issues and challenges that may occur on site
- explain rigging practices and systems in relation to telecommunications radio structures, and related licensing and regulatory issues
- discuss the main principles of:
  - electromagnetic radiation (EMR) safety practices
  - optical fibre cabling and equipment safety practices

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  - working-at-heights safety practices
- summarise specific WHS requirements relating to the activity and site conditions, including:
  - basic survival skills
  - company WHS procedures
  - hypothermia
  - remote area first aid.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – telecommunications rigging installation field of work and include access to special purpose tools, equipment and materials.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTCR303 Protect against electromagnetic radiation and systems hazards when working on telecomms radio sites

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to protect personnel against electromagnetic radiation (EMR) and system hazards when working on standard telecommunications structures with radio sites.

This unit applies to technical staff who work on telecommunications radio sites and may make use of rigging plant and equipment, fall arrest, fall guarding and fall constraints on standard telecommunications structures.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide or the relevant regulator for details of licensing, legislative or certification requirements.

Unit Sector

Telecommunications – telecommunications rigging installation

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for work at telecommunications site with potential	1.1 Prepare for given work using safe working practices and procedures according to WHS legislation, codes, regulations and standards 1.2 Assess potential sources of radio frequency (RF) EMR, allowing

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EMR hazards	permissible public and occupational EMR exposure limits according to Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) 1.3 Verify methods for determining EMR levels, and strategies for eliminating, minimising or isolating on-site EMR hazards according to industry practice 1.4 Confirm work objectives and specifications of equipment to be installed, according to design drawings, installation plans and equipment manufacturer's specifications 1.5 Select equipment and personal protective equipment required to support the EMR hazard management plan according to company policy
2. Plan and carry out EMR hazard management plan in relation to on-site situation	2.1 Produce EMR hazard management plan according to company policy 2.2 Consult with client to confirm EMR hazard management plan and update if required 2.3 Communicate agreed EMR hazard management plan to all personnel on site
3. Monitor EMR hazard management plan	3.1 Maintain ongoing communication to all personnel regarding amendments to EMR hazard management plan according to company policy 3.2 Ensure that personal radiation monitor (Radman) is worn according to manufacturer's instructions and industry practice

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1, 1.2, 1.4, 1.5, 3.2	• Interprets textual information from relevant sources to plan, identify job requirements and adhere to procedures and standards
Writing	2.1, 2.2, 3.1	• Uses correct terminology, spelling and grammar when advising others of requirements • Produces and completes relevant reports and documentation using clear and technically specific language, and accurately records numerical data and diagrammatic information

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Oral Communication	1.4, 2.2, 2.3, 3.1	• Uses listening and questioning skills to confirm understanding of requirements • Participates in a verbal exchange of ideas and solutions, and uses appropriate, detailed and clear language to address key personnel and client and to disseminate information
Numeracy	1.4	• Interprets numerical information and applies to specifications
Navigate the world of work	1.1-1.5, 2.1, 3.1, 3.2	• Takes personal responsibility for adherence to legal and regulatory requirements, standards, specifications, industry practice and company policy relevant to own work context, and draws attention to any issues that may affect self or others
Get the work done	1.1-1.5	• Uses systematic, analytical processes in relation to assessing potential hazards, setting goals, gathering relevant information, and identifying and evaluating options against agreed criteria • Applies formal problem solving processes when adapting rigging activities and requirements to particular sites and conditions, breaking complex issues into manageable parts and identifying and evaluating several options for action

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTCR303 Protect against electromagnetic radiation and system hazards when working on telecommunications radio sites	ICTTCR3192A Protect against electromagnetic radiation and system hazards when working on telecommunications radio sites	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTCR303 Protect against electromagnetic radiation and systems hazards when working on telecomms radio sites

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- produce and maintain the electromagnetic radiation (EMR) hazard-management plan for an on-site situation
- carry out work according to the EMR hazard management plan, job specifications and all work health and safety (WHS) regulations and standards.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain the principles of EMR propagation from antenna
- identify features and operating requirements of rigging equipment
- outline licensing and regulatory issues applying to rigging practices and systems on telecommunications radio structures
- describe remote area first aid
- describe rigging practices and systems to telecommunications radio structures
- summarise EMR including:
  - sources and types of radio frequency EMR
  - associated risks
  - risk assessment and mitigation strategies
  - methods of detecting and reporting EMR hazards
  - potential dangers of overexposure
  - safety practices and devices
- outline optical fibre cabling and equipment safety practices

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- outline the relevant requirements of WHS legislation, relevant regulations, and applicable site and company WHS procedures
- describe working-at-heights safety practices.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – telecommunications rigging installation field of work and include access to special purpose tools, equipment and materials.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN203 Install and configure a home or small office network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required for entry level networking support to establish a small office or home office (SOHO) internet connected PC network.

It applies to individuals who may work as an installer or network technician configuring small networks with simple internet protocol (IP) addressing schemes that share a limited range of resources.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for installation of home or small office network	1.1 Prepare for given work confirming site-specific work health and safety (WHS) and environmental requirements with appropriate personnel 1.2 Identify safety hazards and implement risk control measures in consultation with appropriate personnel 1.3 Determine nature and scope of the network and network resources from job briefs or appropriate personnel

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Select and obtain personal computer system and network device requirements according to enterprise procedures 1.5 Obtain operating instructions, manuals, hardware and software testing methodologies 1.6 Consult appropriate personnel to ensure task is coordinated effectively with others involved at the worksite
2. Install and troubleshoot home or small office network	2.1 Set up personal computer systems according to manufacturer's specifications and enterprise procedures 2.2 Set up, configure and share network resources between network devices 2.3 Determine network addressing scheme for network connectivity and confirm using calculations 2.4 Troubleshoot network and internet connectivity according to manufacturer's specifications and enterprise procedures 2.5 Identify security threats and initiate control measures according to enterprise procedures
3. Complete and document network installation	3.1 Restore worksite to safe condition according to established safety procedures 3.2 Record and store essential installation information according to enterprise procedures 3.3 Notify appropriate personnel of completion of the task according to enterprise procedures 3.4 Notify appropriate personnel and obtain sign-off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Writing	3.2, 3.4	• Completes workplace documentation accurately using appropriate form and vocabulary for intended audience
Oral Communication	3.3, 3.4	• Conveys specific messages efficiently and uses an appropriate tone and vocabulary for intended audience

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Numeracy	2.3	• Confirms decisions using basic calculations and predictions
Navigate the world of work	1.1-1.4, 2.4, 2.5, 3.1-3.3	• Follows legislative requirements and organisational protocols, policies and procedures relevant to own role
Interact with others	1.1-1.3, 1.6	• Collaborates and cooperates with others to achieve specific outcomes
Get the work done	1.4, 1.5, 2.1-2.5	• Prioritises and plans work to meet organisational requirements and client expectations • Recognises and anticipates a range of problems, actively looking for early warning signs and implementing contingency plans when appropriate

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN203 Install and configure a home or small office network	ICTTEN2207A Install and configure a home or small office network	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN203 Install and configure a home or small office network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- implement work health and safety (WHS) workplace procedures and practices
- plan installation of an internet connected network with advice and approvals of relevant personnel
- set up and configure wired and wireless networks with simple addressing schemes
- troubleshoot network and internet connectivity
- set up resource sharing
- deploy simple firewall network security
- obtain sign-off with relevant personnel.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline correct usage of tools and equipment
- describe enterprise WHS procedures
- outline basic computer systems and network operating systems
- describe computer networking principles (wired and wireless)
- outline network addressing systems (basic)
- explain network services and associated network models and protocols
- outline network security management
- outline troubleshooting procedures.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications network engineering field of work and include access to:

- a site where installation of a small office home office network may be conducted
- tools, equipment and materials currently used in the industry
- relevant workplace procedures, specifications and reference materials.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN204 Install and configure a small to medium business network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to establish and support a small to medium business network capable of providing wide area network (WAN) connectivity and common web internet services.

It applies to individuals who may be working as a small to medium enterprise (SME) internet protocol (IP) network installer, network technician or SME network support person.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications networks engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for installation of small to medium enterprise network	1.1 Prepare for given work, confirming site-specific work health and safety (WHS) and environmental requirements with appropriate personnel 1.2 Identify safety hazards and implement risk control measures in consultation with appropriate personnel

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ELEMENT	PERFORMANCE CRITERIA
	1.3 Determine nature and scope of business network and network resources from job briefs or appropriate personnel 1.4 Select and obtain computer system and network device requirements according to enterprise procedures 1.5 Obtain operating instructions, manuals, hardware and software testing methodologies 1.6 Consult appropriate personnel to ensure the task is coordinated effectively with others involved at worksite
2. Install and configure small to medium enterprise network	2.1 Set up wired infrastructure according to manufacturer's specifications and enterprise procedures 2.2 Set up and configure resource sharing on a network server 2.3 Install WAN connection and ISP services and configure according to enterprise procedures 2.4 Troubleshoot network and internet connectivity according to manufacturer's specifications and enterprise procedures 2.5 Implement data back-up and disaster recovery measures according to enterprise procedures
3. Complete and document network installation	3.1 Restore worksite to safe condition according to established safety procedures 3.2 Record and store essential installation information according to enterprise procedures 3.3 Notify appropriate personnel of completion of the task according to enterprise procedures 3.4 Notify customer and obtain sign-off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.3	• Identifies and interprets scope of job and relevant procedures
Writing	3.2, 3.4	• Completes workplace documentation accurately using appropriate form and vocabulary for the intended

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		audience
Oral Communication	3.3, 3.4	• Conveys specific messages efficiently and uses an appropriate tone and vocabulary for intended audience
Numeracy	1.3, 2.1	• Makes calculations appropriate for measuring and estimating materials and for installation
Navigate the world of work	1.1-1.3, 2.1, 2.3-2.5, 3.1-3.3	• Follows legislative requirements and organisational protocols, policies and procedures relevant to own role
Interact with others	1.1-1.3, 1.6	• Collaborates and cooperates with others to achieve desired outcomes
Get the work done	1.4, 1.5, 2.3-2.5	• Prioritises and plans work to meet organisational standards, regulatory requirements and client expectations • Recognises and anticipates a range of problems, actively looking for early warning signs and implementing contingency plans when appropriate • Uses digital technologies and systems to complete work tasks

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN204 Install and configure a small to medium business network	ICTTEN2208A Install and configure a small to medium business network	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN204 Install and configure a small to medium business network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- implement work health and safety (WHS) workplace procedures and practices
- plan installation of a network that uses subnet addressing and provides internet service provider (ISP) services
- set up and configure wired infrastructure
- troubleshoot local network and wide area network (WAN) connectivity and services
- configure resource sharing on a network server
- provide network data back-up and disaster recovery.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify correct usage of tools and equipment
- outline data back-up services and procedures
- describe enterprise WHS procedures
- define ISP services
- outline network device configuration
- describe network models and topologies
- define subnet addressing
- outline troubleshooting procedures
- describe WAN services and ISP responsibilities.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications network engineering field of work and include access to:

- a site where installation of a small to medium business network may be conducted
- tools, equipment and materials currently used in industry
- relevant workplace procedures
- product and manufacturing specifications and reference materials.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN205 Build and maintain a secure network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to build a simple and secure wired local area network (LAN) or wide area network (WAN) using a range of client server applications and services.

It applies to individuals who may work in job roles such as an installer of internet protocol (IP) networks, a WAN and LAN network technician or a WAN and LAN network support person.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to build LAN or WAN	1.1 Prepare for given work confirming site-specific work health and safety (WHS) and environmental requirements, with appropriate personnel 1.2 Identify safety hazards and implement risk control measures in consultation with appropriate personnel 1.3 Determine network design specification from job briefs or

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ELEMENT	PERFORMANCE CRITERIA
	appropriate personnel 1.4 Determine network addressing scheme for network connectivity and confirm using calculations 1.5 Select and obtain network hardware according to established procedures 1.6 Obtain operating instructions, manuals, hardware and software testing methodologies 1.7 Consult appropriate personnel to ensure the task is coordinated effectively with others involved at the worksite
2. Build and verify network	2.1 Establish connections between network hardware according to manufacturer's specifications and established procedures 2.2 Verify network routing and switching to conform to network design specification 2.3 Set up, configure and share network resources between network devices
3. Monitor network performance and troubleshoot network	3.1 Monitor network traffic and assess performance metrics against manufacturer's specifications and established procedures 3.2 Identify security threats and initiate control measures according to enterprise procedures 3.3 Troubleshoot network and internet connectivity according to manufacturer's specifications and enterprise procedures
4. Complete and document network build	4.1 Restore worksite to safe condition according to established safety procedures 4.2 Record and store network schematics and network addressing scheme 4.3 Notify appropriate personnel of completion of the task 4.4 Notify customer and obtain sign-off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description

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Reading	1.3, 2.1	• Identifies and interprets scope of job and relevant procedures
Writing	4.2, 4.4	• Completes workplace documentation accurately using appropriate form and vocabulary for intended audience
Oral Communication	4.3, 4.4	• Articulates specific messages in a tone and manner appropriate for intended audience
Numeracy	1.4, 3.1	• Confirms and checks decisions using basic calculations and predictions
Navigate the world of work	1.1, 1.2, 1.4, 1.5, 2.1, 3.1-3.3, 4.1	• Follows legislative requirements and organisational protocols, policies and procedures relevant to own role
Interact with others	1.1-1.3, 1.7,	• Collaborates and cooperates with others to achieve specific outcomes
Get the work done	1.5, 1.6, 2.1, 2.2, 3.1-3.3, 4.2	• Plans and prioritises tasks, developing and implementing a work program in line with organisational expectations, legislative requirements and work role • Recognises and anticipates a range of problems, actively looking for early warning signs and implementing contingency plans when appropriate • Uses digital technologies and systems to complete required tasks

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN205 Build and maintain a secure network	ICTTEN2209A Build and maintain a secure network	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN205 Build and maintain a secure network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- effectively implement work health and safety (WHS) workplace procedures and practices
- develop a network addressing scheme
- determine required network components to build the network
- plan, build, configure, test and analyse performance of a network
- troubleshoot network problems.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe enterprise WHS procedures
- explain internet and computer network communication
- outline network addressing schemes including open systems interconnect (OSI) and transmission control protocol (TCP)/IP model
- describe planning the cabling of ethernet networks
- define the seven layer OSI model
- identify correct tool and equipment usage
- identify troubleshooting procedures.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications network engineering field of work and include access to:

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- a site where building and maintenance of secure network may be conducted
- tools, equipment and materials currently used in industry
- relevant workplace procedures
- product and manufacturing specifications and reference material.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN206 Operate new media software packages

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to produce a media design through selection and appraisal of media software tools, assessment and manipulation of software functions and the use and creation of graphics and editing media files.

It applies to individuals who want an introduction to the use of media software packages and may eventually lead to employment in graphic design, industrial design, or production of promotional and marketing media material.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify relevant new media software and supporting hardware to meet design brief	1.1 Perform media work in a safe manner to comply with work health and safety (WHS) criteria and accepted industry practice 1.2 Identify basic requirements of media design brief, including user environment from customer specifications 1.3 Research and review new media software and hardware available to realise design requirements

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Select a new media software program to meet design brief requirements 1.5 Identify relevant new media hardware to support design brief requirements 1.6 Select, re-encode and transcode relevant file formats to process and modify digital media files to suit user application
2. Develop a new media graphic design	2.1 Review design brief to ensure customer requirements are well interpreted 2.2 Procure or create suitable graphics, video or sound to meet requirements of design brief 2.3 Manipulate graphics, video or sound using freely available software tools for evaluating capabilities and limitations of different software packages 2.4 Produce a media design according to customer specifications, and save new media files using designated file formats
3. Review new media design	3.1 Evaluate media design for creative, dramatic and technical quality, file size, and data suitability to meet the brief 3.2 Test and run graphics, video and sound of media design as part of a multimedia presentation, and present designs in the appropriate format

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.2, 1.3, 1.4, 1.5, 2.1	• Interprets workplace documents and confirms specifications are met
Numeracy	2.3, 3.1	• Calculates dimensions and measurements to meet job specifications
Navigate the world of work	1.1	• Follows legislative requirements and organisational protocols, policies and procedures relevant to own role

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Get the work done	1.3, 1.4, 1.6, 2.2, 2.3, 2.4, 3.1, 3.2	• Prioritises and plans work to meet organisational expectations, legislative requirements and client expectations • Recognises and anticipates a range of problems, actively looking for early warning signs and implementing contingency plans when appropriate • Evaluates features of digital tools against set criteria to inform decisions about suitability • Uses digital technologies and systems to enter, manipulate and store data

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN206 Operate new media software packages	ICTTEN2218A Operate new media software packages	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN206 Operate new media software packages

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- evaluate new media software
- manipulate files effectively
- produce an effective media design using two new media software packages
- evaluate a design
- test and run a design.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain functions and features of two new media applications
- define graphic design and stylistic language conventions
- identify software tools to develop, edit and test design
- outline principles of:
  - digital imaging and file formats
  - file management
  - transfer systems
  - video and sound file formats
  - visual design principles
- outline vendor product directions in new media hardware and software
- describe visualisation and interpreting creative information, scripts (text) and images.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications network engineering field of work and include access to:

- work stations with appropriate software tools
- media capable PCs
- peripheral media equipment with HD capability
- LAN with media server
- internet access.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN207 Install and test internet protocol devices in convergence networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required for entry-level installations and testing for internet protocol (IP) based telecommunications networking, using convergent technologies to deliver services of Next Generation Networks (NGN).

It applies to technicians and cable installers who install and maintain IP-based equipment for customer and service providers for NGN services, including internet protocol TV (IPTV), IP security, digital home networks, IP-based cable access TV (CATV), IP core and access networks, home automation, interactive TV, radio frequency identification (RFID), biometric recognition systems, mesh networks, smart grids and cloud computing.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Gather information to prepare for installation of IP device	1.1 Obtain work health and safety (WHS) requirements and environmental requirements for a given work area, and clarify with appropriate personnel

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ELEMENT	PERFORMANCE CRITERIA
	1.2 Identify safety hazards and notify appropriate personnel 1.3 Obtain identified operating instructions, manuals, and hardware and software testing methodologies 1.4 Obtain documentation on a range of IP devices that can be networked according to the open system interconnection (OSI) reference model in networking 1.5 Obtain the range of required IP devices to be connected to the network and identify the IP-based telecommunications application that will be provided
2. Prepare for installation of IP device	2.1 Select IP device for installation that can be integrated into existing network 2.2 Obtain appropriate hardware, software, network protocols, peripheral devices and media types and connectors for configuration process 2.3 Draw physical topology of the device connection to network and seek approval from appropriate personnel 2.4 Obtain configuration details to start setting up device
3. Configure and test IP device	3.1 Determine network addressing scheme for mapping network connectivity and verify by calculations 3.2 Assign a valid static IP address to device 3.3 Use network commands to determine and verify the media access control (MAC) address, the IP address and network performance of the device 3.4 Determine security threats and initiate security solutions to prevent security breaches according to enterprise procedures
4. Complete and document network installation	4.1 Restore worksite to safe condition according to established safety procedures 4.2 Record and store essential installation information according to enterprise procedures 4.3 Notify appropriate person of task completion according to enterprise procedures
5. Test wireless link	5.1 Select types of wireless connections used in telecommunications 5.2 Set up a wireless link to connect two wireless devices, following safe work practices 5.3 Transmit data over the link and verify accuracy of received data

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.3-1.5, 3.3, 3.1	• Evaluates information and products from a variety of sources to ensure appropriateness to client needs
Writing	2.3, 3.2, 3.3, 4.2, 4.3, 5.3	• Develops accurate and industry specific drawings • Writes computer code and commands and records technical data, ensuring correct syntax and accuracy
Oral Communication	4.3	• Uses clear language and concepts, and tone and pace appropriate for audience and purpose
Numeracy	3.1	• Performs basic mathematical calculations to compare and verify connectivity
Navigate the world of work	1.1, 3.4, 4.1-4.3, 5.2	• Understands roles and responsibilities for task and makes basic decisions on work and completion parameters • Ensures knowledge of WHS requirements • Recognises organisational expectations and follows explicit protocols and procedures • Seeks clarification when required
Interact with others	1.1, 1.2, 2.4	• Follows instructions regarding what and how to communicate, following predetermined scripts • Initiates a connection with others through verbal, or nonverbal communication responding as appropriate
Get the work done	1.2-1.5, 2.1-2.4, 3.1-3.4, 4.1, 5.1-5.3	• Plans and implements routine tasks and workload, making limited decisions on sequencing, timing and collaboration, and seeks assistance in setting priorities • Makes low-impact decisions within familiar situations, based on a range of predefined or routine solutions and evaluates outcome effectiveness • Responds to predictable routine problems and implements standard or logical solutions • Uses digital technology for basic reading, recording and searching information, and for communications following routine procedures and security requirements

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTTEN207 Install and test internet protocol devices in convergence networks	ICTTEN2219A Install and test internet protocol devices in convergence networks	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN207 Install and test internet protocol devices in convergence networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- prepare for installation of internet protocol (IP) device connected to a network
- set up and configure IP device with simple addressing schemes
- test and secure device against security threats
- produce essential installation information
- follow work health and safety (WHS) workplace procedures and practices
- test wireless link.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe principles of computer networking and identify common types and protocols used
- describe IP-based telecommunications and importance of network configuration including:
  - IP addressing
  - IP devices
- identify and describe the purpose of common hardware and software used in IP communications
- identify and summarise organisational policies and procedures relating to installation and testing of internet protocol devices
- describe common procedures for basic testing and troubleshooting an IP device
- describe procedures for assigning networking protocols
- explain the purpose for internet security and describe common configurations

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- describe various basic wireless technologies and their application in communications
- describe environmental factors requiring management on telecommunications equipment
- identify and describe WHS requirements and personal safety issues relating to installation and testing of internet protocol devices
- define open system interconnection (OSI) and explain various levels involved
- identify common types of peripheral devices used in network communications systems
- calculate using the binary system
- describe common computer commands used to verify and manage IP and network performance
- identify common security threats attributed to networks and specify solutions to combat these threats
- identify common wireless technologies used in communications.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications network engineering field of work and include access to:

- a small network with IP devices
- tools, equipment, materials and documentation required for installing and testing IP devices
- relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN301 Provide infrastructure for telecommunications network equipment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to install supporting infrastructure for telecommunications equipment and associated hardware equipment.

It applies to field officers, installation technicians or technical supervisors from carriers, contractors or other service providers who install switching, transmission and radio networks and the various transmission paths – including cable, optical fibre, radio, microwave and satellite.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for installation infrastructure work	1.1 Obtain relevant legislation, codes, regulations and standards for compliance when conducting work 1.2 Notify customer to arrange site access and obtain installation plan and specifications

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ELEMENT	PERFORMANCE CRITERIA
	1.3 Conduct site survey to verify infrastructure installation requirements can be met 1.4 Identify site hazards and notify appropriate personnel to make site safe 1.5 Notify customer of alterations required to installation design and make recommendations for possible solutions 1.6 Obtain approval for alterations and update installation plan 1.7 Develop installation activity schedule to minimise workplace disruption and according to relevant regulations and standards 1.8 Obtain material supplies, safety equipment, resources, tools and test equipment so it is available when required for installation for safe work practice
2. Build network equipment infrastructure	2.1 Prepare for given work according to work health and safety (WHS) and environmental requirements 2.2 Build metal superstructure to house equipment according to manufacturer's specifications and to safety and electrical standards 2.3 Build ducts and tray ways for signal and data cabling and optical cables according to plan and specification after consultation with operational staff 2.4 Build busbars or power cabling infrastructure as specified on the plan 2.5 Install cable distribution frames according to plan and manufacturer's specifications 2.6 Install earthing to all metal infrastructures according to specifications
3. Install power infrastructure	3.1 Install batteries and rectifiers and connect according to manufacturer's and WHS requirements 3.2 Test and monitor battery discharge levels and obtain replacement batteries under warranty where required
4. Supervise DC power distribution	4.1 Coordinate and arrange for power distribution work to be performed by qualified personnel to meet electrical safety requirements and certifications 4.2 Monitor electrical work to ensure compliance with installation plan 4.3 Identify and rectify faults where possible or escalate according to enterprise policy
5. Restore site and	5.1 Attach infrastructure labels and designations according to

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ELEMENT	PERFORMANCE CRITERIA
complete documentation	enterprise requirements 5.2 Complete inspection sheets and declare asset ready for next stage of installation using appropriate sign-off documentation 5.3 Clean up and prepare site in readiness for next installation phase 5.4 Notify customer and obtain sign-off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.3, 2.1-2.6, 3.1, 4.1, 4.2	• Interprets and applies textual information from plans, specifications, legislation and regulatory documents to building and construction
Writing	1.3, 1.5-1.7, 5.1, 5.2, 5.4	• Documents outcomes and changes to plans using industry relevant terminology and recognised plan symbols • Prepares documentation for outcomes of tests and inspections for reporting to clients and others
Oral Communication	1.2, 1.4-1.6, 2.3, 5.4	• Uses active listening skills and oral exchange when discussing and clarifying installation parameters and providing feedback to clients • Actively engages with others to communicate work requirements and activities
Numeracy	2.2-2.6, 3.2	• Takes measurements and uses them for work layout and construction • Makes calculations appropriate to measuring and estimating materials for construction
Navigate the world of work	1.1, 1.7, 2.1, 2.2, 3.1, 4.1, 4.3, 5.1	• Accepts responsibility and ownership for the task and makes decisions on completion parameters and the need of coordination with others • Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements
Interact with others	1.2, 1.4-1.6, 2.3, 3.2, 4.1	• Selects and uses appropriate conventions and protocols when communicating to clients and co- workers in a range of work contexts

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		• Complies with work instructions and contributes to work group discussions using accepted conventions
Get the work done	1.1, 1.3, 1.4, 1.7, 1.8, 2.2-2.6, 3.1, 3.2, 4.1-4.3, 5.2, 5.3	• Takes responsibility for planning, sequencing and prioritising tasks and workload for efficiency and effective outcomes • Makes routine decisions and implements standard procedures for routine tasks, using formal decision-making processes for more complex and non-routine situations

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN301 Provide infrastructure for telecommunications network equipment	ICTTEN3054B Provide infrastructure for telecommunications network equipment	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN301 Provide infrastructure for telecommunications network equipment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- identify potential earthing locations, cable routes, cables trays, data cabinets, telecommunication enclosures and distributors
- build metal superstructure
- install protective earth and functional earth installations
- install power infrastructure
- supervise DC power distribution
- discuss and inform the customer on the progress of works and obtain sign off when completed.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify and describe cabling types, connectors and cabling structures
- recognise common customer telecommunications applications and related equipment
- demonstrate connections to carrier infrastructure or equipment
- recognise and describe current legislation relating to installation of telecommunications equipment and connection to carrier services
- describe environmental impact of cabling works, including options for green ICT installations
- describe network topologies, interface and interconnect solutions
- recognise and describe work health and safety (WHS) requirements for:
  - working in confined spaces
  - electrical safety

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  - working at heights
  - lifting
  - materials handling
  - other physical hazards
- outline network and transmission equipment and their application
- describe power requirements and electrical safety as they apply to the network environment
- recognise warranty information for equipment supplies and contractor work guarantees.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the Telecommunications networks engineering field of work and include access to:

- a site where installation of supporting infrastructure may be conducted
- plant, tools and equipment currently used in industry
- relevant regulatory and equipment documentation that impact work activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN307 Repair and replace telecommunications network hardware

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to fix and reinstate equipment in switching, transmission and fixed and mobile radio networks; including the various transmission path components, such as cable, optical fibre, radio, microwave and satellite.

It applies to individuals working as field officers, technicians or technical supervisors for carriers, or other service providers. It also applies to work performed under direction of the Network Operations Centre (NOC), where control of the network is coordinated.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*

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ELEMENT	PERFORMANCE CRITERIA
1. Prepare for hardware repair and replacement	1.1 Obtain relevant legislation, codes, regulations and standards for the given work 1.2 Discuss and record details of hardware to be repaired or replaced, and proposed work schedule with the appropriate person at NOC 1.3 Work safely according to relevant safety legislation and company work practices, identifying hazards and using personal protective equipment 1.4 Obtain appropriate replacement hardware and associated documentation 1.5 Inspect network and determine need for repair task 1.6 Obtain tools and check they are in good working order 1.7 Undertake an impact risk assessment of the hardware replacement with the NOC, and prepare for contingencies using contingency plan
2. Rectify fault by replacing hardware	2.1 Replace equipment as instructed by the NOC following anti-static precautions in the case of sensitive electronic equipment and work health and safety (WHS) and environmental requirements 2.2 Inform NOC if problems occur with hardware replacement so escalation may commence and contingency plan initiated 2.3 Test replacement hardware to ensure satisfactory functionality
3. Clean up worksite and complete administrative work	3.1 Remove waste and debris from worksite and dispose of according to environmental requirements and restore work area to NOC satisfaction 3.2 Recover faulty equipment and return to appropriate point for disposal or refurbishment 3.3 Complete documentation, update fault records and make recommendations according to the enterprise quality assurance system 3.4 Notify appropriate person at the NOC of job completion and obtain sign-off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

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Skill	Description
Reading	• Recognises and interprets technical, regulatory and enterprise documentation
Writing	• Uses clear, specific and industry-related terminology to complete and update workplace documentation
Oral Communication	• Liaises with a range of personnel about technical and operational requirements using specific and relevant language • Uses listening and questioning techniques to confirm understanding
Numeracy	• Uses a core group of mathematical formulas involving power, voltage, current and the resistance, capacitance or inductance of various components
Navigate the world of work	• Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements
Get the work done	• Determines job priorities, resources and equipment, and works logically and systematically to undertake clearly defined and familiar tasks • Implements actions according to a predetermined plan, making adjustments if necessary • Takes responsibility for routine decision-making by selecting from a range of predetermined options in routine situations, identifying and taking some situational factors into account • Initiates standard procedures when responding to familiar faults within immediate context • Understands purpose and some specific functions of common digital tools used in work contexts

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTTEN307 Repair and replace telecommunications network hardware (Release 2)	ICTTEN307 Repair and replace telecommunications network hardware (Release 1)	Updates to performance evidence, knowledge evidence, and foundation skills.	Equivalent Unit

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Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN307 Repair and replace telecommunications network hardware

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to perform the items listed on two occasions:

- rectify fault as instructed by Network Operations Centre (NOC), following work health and safety (WHS) requirements and anti-static precautions
- replace telecommunications hardware within service assurance guidelines according to enterprise procedures
- update fault records database according to enterprise procedures
- liaise with appropriate personnel in the NOC for information and reporting purposes.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

- application of direct current (DC) and alternating current (AC) electrical principles
- static electricity and its importance in testing and working with telecommunications equipment
- variety of possible symptoms and their impact on an operational network caused by faulty network elements
- test results and network element or system specifications
- operation and purpose of testing equipment

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- common telecommunications hardware and network structures
- performance testing and fault-finding techniques of telecommunications networks
- systematic and logical fault-finding
- types of power sources used in telecommunications networks
- appropriate test equipment used to undertake fault finding procedures.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- a suitable site to replace telecommunications network hardware
- a range of hardware currently used in industry
- a range of general and test equipment required for testing telecommunications network hardware.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN310 Remove and replace electronic circuit boards in carrier equipment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package version 3.0.

Application

This unit describes the skills and knowledge required to remove and replace electronic circuit boards and associated equipment in switching, transmission, fixed, mobile radio, access and site environmental management networks, including the various transmission path components.

It applies to linesworkers, technicians or technical supervisors working for carriers, or other service providers. It also applies to work, which may be performed under direction of the relevant authority.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications networks engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for hardware replacement	1.1 Obtain repair/replacement brief, relevant legislation, codes, regulations and standards for the job 1.2 Discuss and record details of hardware to be removed or replaced, and proposed work schedule with the relevant authority 1.3 Inspect network and determine the scope of the repair task

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Work safely according to relevant safety legislation and client practices 1.5 Obtain appropriate new or replacement hardware and associated installation documentation 1.6 Obtain tools and check they are in good working order 1.7 Undertake an impact risk assessment of the hardware replacement with the relevant authority and prepare a contingency plan
2. Replace hardware	2.1 Notify relevant authority of any building or equipment cabinet alarms that might be activated by accessing site 2.2 Verify serial/part numbers of replacement card 2.3 Determine card suite, rack, shelf and slot location 2.4 Remove and replace connecting cables and card as required 2.5 Replace electronic equipment, as instructed by the relevant authority, following relevant anti-static precautions 2.6 Complete associated jumpering or cabling as required 2.7 Request relevant authority or integration team to activate the card 2.8 Escalate any hardware replacement problems with the relevant authority and implement contingency plan 2.9 Restore pressurisation systems as required
3. Clean up worksite and complete required documentation	3.1 Remove and dispose of waste and debris from worksite, according to environmental requirements, and restore work area 3.2 Recover faulty equipment and return to appropriate point for disposal or refurbishment 3.3 Complete documentation, update fault records and make recommendations according to the client practices 3.4 Notify relevant authority of job completion and obtain sign-off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance	Description

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	Criteria	
Reading	1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 3.3	• Recognises and interprets technical, regulatory and enterprise documentation
Writing	1.2, 1.3, 1.7, 2.1, 3.3, 3.4	• Uses clear, specific and industry-related terminology to complete and update workplace documentation
Oral Communication	1.2, 1.7, 2.1, 2.7, 2.8, 3.4	• Liaises with a range of personnel about technical and operational requirements using specific and relevant language • Uses listening and questioning techniques to confirm understanding
Numeracy	1.2, 1.5, 2.2, 2.6, 3.3	• Uses mathematical formulae to calculate power, voltage, current and the resistance, capacitance or inductance of various components
Navigate the world of work	1.1, 1.4, 2.5, 3.1, 3.2, 3.3	• Complies with policies, procedures and legislative requirements relevant to own role
Interact with others	1.2, 1.7, 2.1, 2.7, 2.8, 3.4	• Uses appropriate practices and protocols to communicate effectively with a range of personnel
Get the work done	1.1, 1.3, 1.5, 1.6, 1.7, 2.1, 2.3, 2.4, 2.6, 2.7, 2.8, 2.9, 3.1, 3.2, 3.3, 3.4	• Plans, sequences and carries out tasks to meet required outcomes • Analyses task requirements to made routine decisions, taking some situational factors into account • Anticipates potential problems and prepares contingency plans • Follows required procedures when responding to problems • Understands purpose and some specific functions of common digital tools used in work contexts

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN310 Remove and replace electronic circuit boards in carrier equipment	Not applicable	New unit to meet skills required by the industry.	No equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN310 Remove and replace electronic circuit boards in carrier equipment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 3.0.

Performance Evidence

Evidence of the ability to:

- interpret, discuss and confirm required work
- obtain documentation, equipment and hardware for required work
- notify relevant personnel of alarms that could be activated in the access and restoration of equipment cabinets and enclosures
- prepare a contingency plan to use if card replacement is unsuccessful, in consultation with relevant personnel
- remove and replace circuit boards as instructed by relevant authority, following work health and safety (WHS) requirements and anti-static precautions
- replace telecommunications hardware according to client practices
- follow required practices or contingency plan if hardware replacement is unsuccessful
- update fault records and complete required documentation
- restore site to required condition
- liaise with personnel from relevant authority for information and reporting purposes.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain application of direct current (DC) and alternating current (AC) electrical principles to the removal and replacement of circuit boards
- describe static electricity and its impact on electronic circuit boards in telecommunications equipment
- outline performance testing and fault finding techniques of telecommunications networks
- describe the purpose and operation of common testing equipment

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- describe the behaviour of faulty network elements including symptoms and impact on network
- summarise common telecommunications hardware and network structures
- list types of power sources used in telecommunications networks.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- a suitable site to replace telecommunications network hardware
- a range of hardware currently used in industry
- a range of general and test equipment required for testing telecommunications network hardware.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN402 Estimate and quote for customer telecommunications equipment installation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to assess and estimate costs for all types of customer cabling needs.

It applies to individuals who undertake successful negotiations with customers and suppliers, and who update schematic drawings and specifications.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Confirm and update schematic drawings and specifications	1.1 Obtain existing specifications and drawings and prepare additional or new schematic drawings and specifications for installation if required 1.2 Confirm all fittings, cable types and equipment locations with customer
2. Price labour, materials and other relevant items	2.1 Obtain quotations and delivery dates from suppliers to ensure

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ELEMENT	PERFORMANCE CRITERIA
and establish availability	fair comparisons across suppliers 2.2 Estimate labour costs based on company or industry labour rates and conditions 2.3 Check pricing documentation to ensure supply proposal matches customer specification for material, quality and performance
3. Estimate labour, materials and other relevant item requirements	3.1 Prepare estimations allowing for contingencies during installation and relevant legislation, codes, regulations and standards 3.2 Calculate costs using standard unit measures where relevant 3.3 Ensure estimates will return a profit on installation where appropriate
4. Prepare and confirm quote with customer	4.1 Prepare an equipment installation quote that meets customer requirements 4.2 Negotiate changes and variations to meet customer and company needs
5. Establish customer's financial arrangements	5.1 Obtain customer’s approval of purchase arrangements and method of payment 5.2 Complete finance company negotiations successfully, where required, and obtain customer’s agreement

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 2.3	• Recognises and interprets technical documentation such as equipment manuals and specifications and other drawings to determine job requirements
Writing	1.1, 1.2, 3.1, 4.1, 4.2, 5.1, 5.2	• Uses clear, specific and industry-related terminology to produce and update workplace documentation
Oral Communication	1.2, 4.2, 5.1, 5.2	• Participates in an oral exchange with customers and suppliers, requiring some negotiation and liaison on technical and operational matters
Numeracy	2.2, 3.1-3.3	• Uses mathematical formulae to measure equipment

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		requirements and accurately calculate equipment costs
Navigate the world of work	3.1	• Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements
Get the work done	1.1, 2.1, 5.2	• Determines job priorities, resources and equipment, and works logically and systematically to undertake clearly defined and familiar tasks in a safe manner • Implements actions according to a predetermined plan, making slight adjustments if necessary • Takes responsibility for routine decision-making by selecting from a range of predetermined options in routine situations, and identifying and taking some situational factors into account • Initiates standard procedures when responding to familiar equipment and logistics problems within immediate context

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN402 Estimate and quote for customer telecommunications equipment installation	ICTTEN4003B Estimate and quote for customer telecommunications equipment installation	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN402 Estimate and quote for customer telecommunications equipment installation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- determine customer equipment requirements
- prepare detailed estimates, updated schematic drawings and specifications, including material and labour costs for telecommunications equipment installations
- negotiate with contractors on material availability and pricing for customer equipment installations
- complete detailed quotes for installations that allow for variations
- negotiate and confirm variations to quote and financial arrangements with customer.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe features of customer telecommunications equipment
- outline legislation, codes of practice and other formal agreements that impact the work activity
- explain processes and techniques required to prepare plans, estimate and quote for installations
- describe specific work health and safety (WHS) issues that may impact a quotation for customer equipment installation
- outline typical issues and challenges that occur when negotiating with customers.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- sites on which estimates and quotes may be conducted
- relevant databases, licensing requirements and other site- related documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN403 Assign a transmission path

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to allocate channel capacity to a customer or customer group based on details provided in a service request.

It applies to individuals working as technical officers or engineers for private and public organisations. They combine technical skills with organisational skills to assess customer requirements and allocate a transmission medium to provide access to the customer.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Collect data to evaluate capability of transmission path	1.1 Determine service details from service request 1.2 Use transmission medium plans to locate customer position relative to the access network provisioning 1.3 Evaluate existing transmission mediums in close proximity to assess their capability to deliver service to customer 1.4 Specify equipment to be used on the service from service request

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ELEMENT	PERFORMANCE CRITERIA
	1.5 Specify line interface type to be used, according to enterprise guidelines
2. Allocate transmission medium for service	2.1 Select appropriate transmission medium to deliver service to customer's premises 2.2 Record information about transmission medium between customer's premises and exchange or network terminal point 2.3 Verify service delivery point interface at exchange or network terminal point is compatible with required system 2.4 Conduct appropriate allocation process to assign new services and send completed allocation information to appropriate field staff to verify physical allocation before providing service
3. Maintain transmission medium records	3.1 Advise relevant personnel of impending bearer shortages to facilitate future planning allocation 3.2 Update plans and databases to record all details

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 1.5	• Recognises and interprets technical documentation to determine job requirements
Writing	1.4, 1.5, 2.2, 2.3, 3.1, 3.2	• Uses clear, specific and industry-related terminology to record and notate workplace documentation
Oral Communication	1.4, 1.5, 2.3, 3.1	• Uses listening and questioning skills to confirm understanding of requirements and participates in a verbal exchange with technical staff, subject matter experts and manufacturers • Uses appropriate, detailed and clear language to address key personnel and disseminate information
Numeracy	2.4	• Makes calculations to determine capacity requirements
Interact with others	2.4	• Actively identifies requirements of important communication exchanges, selecting appropriate channels, format, tone and content to suit purpose and

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		audience
Get the work done	1.3, 2.4, 3.2	• Determines job priorities, resources and equipment, and works logically and systematically to undertake clearly defined and familiar tasks • Implements actions according to a predetermined plan, making slight adjustments if necessary • Takes responsibility for routine decision-making by selecting from a range of predetermined options in routine situations, identifying and taking some situational factors into account • Understands purpose and specific functions of common digital tools used in work contexts

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN403 Assign a transmission path	ICTTEN4040A Assign a transmission path	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN403 Assign a transmission path

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- assess transmission needs for a transmission path according to service request
- select suitable equipment to provide new services
- communicate effectively with stakeholders to meet customer needs
- assess future needs.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- review common customer telecommunications applications and related equipment
- investigate core networks using emerging and converging technologies
- explain current legislation relating to installation of telecommunications equipment and connection to carrier services
- evaluate customer access options and their technical support systems
- describe multiplexing principles and transmission hierarchies
- summarise network and transmission equipment
- outline network topologies, interfaces and interconnect solutions.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- sites where transmission paths can be allocated

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- a computer networking facility
- relevant regulatory and equipment documentation
- equipment currently used in industry.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN404 Install and configure a wireless mesh network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to connect and test wireless networking equipment or radio communications equipment.

It applies to individuals working as technicians and technical officers for private and public organisations.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Configure wireless mesh nodes and wireless access points	1.1 Determine internet protocol (IP) addressing schemes from design plan, obtained from appropriate personnel 1.2 Confirm compatibility of factory installed firmware in wireless routers with mesh routing requirements – otherwise install upgrade firmware 1.3 Configure wireless router settings and wireless fidelity (WiFi) for wireless access point settings for inclusion in mesh network 1.4 Connect mesh node and access node back-to-back via a straight

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ELEMENT	PERFORMANCE CRITERIA
	LAN cable according to design plan
2. Connect separate mesh networks via backbone	2.1 Configure routing software on mesh and backbone nodes to enable mesh traffic to reach backbone 2.2 Connect mesh node and backbone node back-to-back via a straight LAN cable 2.3 Configure gateway server and gateway node and add required services to network
3. Test connectivity within mesh network	3.1 Assemble all wireless mesh routers with configuration sheets attached, and power up routers 3.2 Connect PC to a wireless mesh router and confirm an IP address is provided automatically by dynamic host configuration protocol (DHCP) 3.3 Confirm connectivity to mesh nodes and the gateway by pinging individual IP addresses, and rectify faulty nodes if required
4. Test network connectivity via wireless backbone	4.1 Install mesh nodes according to design plan 4.2 Install and align directional antennas on wireless backbone path according to installation instructions and work health and safety (WHS) procedures 4.3 Confirm connectivity between mesh clusters at either end of wireless backbone
5. Clean up worksite and complete administrative work	5.1 Remove waste from worksite, dispose of according to environmental requirements and restore work area to customer's satisfaction 5.2 Update documentation records and make recommendations according to enterprise policy 5.3 Notify customer of job completion and obtain sign-off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	4.2, 5.2	• Recognises and interprets technical documentation to

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		determine job requirements
Writing	5.2, 5.3	• Uses clear, specific and industry-related terminology to produce and update workplace documentation in predetermined formats
Numeracy	1.3, 2.3	• Performs calculations to interpret results and evaluate different types of technical data and configure system performance
Navigate the world of work	4.2, 5.1, 5.2	• Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements relevant to own work context
Interact with others	1.1, 5.3	• Selects appropriate form, channel and mode of communication when liaising with customers, vendors and installation personnel on technical and operational matters
Get the work done	1.2, 1.3, 1.4, 2.1, 2.2, 2.3, 3.1, 3.2, 3.3, 4.1, 4.2, 4.3	• Understands key principles and concepts underpinning design and operation of digital systems and tools and applies these when troubleshooting existing technology and when seeking to understand the potential of new technology • Determines job priorities, resources and equipment, and works logically and systematically to undertake clearly defined and familiar tasks • Implements actions according to a predetermined plan, making adjustments if necessary • Takes responsibility for routine decision-making by selecting from a range of predetermined options in routine situations, identifying and taking situational factors into account • When dealing with complex issues, may use intuition to identify problems, switching to analytical processes to modify activities depending on operational contingencies, risk situations and environments to generate possible solutions

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN404Install and configure a wireless mesh	ICTTEN4050A Install and configure a	Updated to meet Standards	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
network	wireless mesh network	for Training Packages	

Links

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Assessment Requirements for ICTTEN404 Install and configure a wireless mesh network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- configure wireless mesh nodes
- install wireless mesh nodes, access point nodes and gateway
- test nodes for connectivity.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain requirements for 802.11 wireless protocols
- describe allocation of internet protocol (IP) addresses and subnet masks
- summarise antenna gain and polarisation
- outline cable loss
- explain calculation of effective isotropic radiated power (EIRP)
- explain calculation of line of site radio range
- explain decibels and related units
- outline network topologies
- describe radio frequency (RF) bands
- summarise routing protocols
- outline transmission control protocols(TCP)-IP describe wireless networking hardware, access points, wireless routers and gateway.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- sites on which configuring and installing wireless mesh network may be conducted
- technical documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN406 Effect changes to existing customer premises equipment systems and equipment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to effect changes to existing customer premises' equipment (CPE), systems and products, through producing plans, carrying out alterations and testing new work.

It applies to individuals who may be working as linespeople, line installers and technicians for telecommunications carriers, contractors, other service providers or private providers who upgrade or modify customer equipment and systems.

No licensing, legislative or certification requirements apply to this unit at the time of publication

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare requirements for alteration	1.1 Arrange site access according to required procedure and comply with site security arrangements and relevant legislation, codes, regulations and standards 1.2 Assess facilities and capacity to ensure requirements can be met 1.3 Evaluate existing system availability and access to accommodate

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ELEMENT	PERFORMANCE CRITERIA
	proposed changes 1.4 Notify appropriate personnel of identified safety hazards at worksite 1.5 Evaluate compatibility of existing and proposed systems and equipment before proceeding with planned changes 1.6 Negotiate planned system outages and outage time with the customer
2. Document specifications and plans for alteration	2.1 Produce an amendment plan of systems alterations to assess suitability with existing system 2.2 Produce specifications for alteration requirements according to customer requirements 2.3 Select materials and tools and equipment compatible with upgrade activity
3. Install additional equipment and program system feature changes	3.1 Produce an activity plan for minimal disruption of alterations to ongoing client activity 3.2 Carry out all alterations in a safe manner according to relevant standards and regulations and manufacturer's specifications 3.3 Test new work in isolation and when integrated with existing systems to confirm compatibility of alterations with existing network
4. Update plans and records	4.1 Update all plans and documents to show installed systems accurately and clearly 4.2 Complete documentation for customer support
5. Restore site to required condition	5.1 Remove waste and debris from worksite and dispose of according to environmental requirements to maintain safe worksite conditions 5.2 Recover obsolete equipment and return to customer or disposal of as agreed with customer 5.3 Notify customer of job completion and obtain sign-off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

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Skill	Performance Criteria	Description
Writing	2.1, 2.2, 3.1, 4.1, 4.2, 5.3	• Completes workplace documentation accurately using appropriate form and vocabulary for intended audience
Oral Communication	1.4, 5.3	• Conveys specific messages efficiently and uses an appropriate tone and vocabulary for intended audience
Navigate the world of work	1.1, 3.2, 5.1, 5.2	• Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements relevant to own work context
Interact with others	1.4, 1.6, 5.2	• Selects appropriate form, channel and mode of communication when liaising with customers and personnel on technical and operational matters
Get the work done	1.1, 1.3, 1.5, 2.1, 2.2, 3.1, 3.3	• Prioritises and plans work to meet deadlines and client expectations • Uses digital technologies and systems to complete required tasks

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTTEN406 Effect changes to existing customer premises equipment systems and equipment	ICTTEN4072A Effect changes to existing customer premises equipment systems and equipment	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN406 Effect changes to existing customer premises equipment systems and equipment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- identify customer's needs
- develop plans and drawings to give effect to planned changes to systems and equipment
- alter system and equipment including physical and programming change according to work health and safety (WHS) regulations and relevant standards
- identify, conduct and interpret tests appropriate to the change
- notify customer and relevant personnel of progress.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline legislation, codes of practice and other formal agreements that impact changes to customer equipment and systems
- identify manufacturer's requirements for safe operation of equipment
- define network addressing
- consider specific WHS requirements relating to customer premises' equipment
- establish types of customer premises' equipment (CPE) that may require upgrade
- describe typical issues and challenges that occur on site
- identify vendor products.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications network engineering field of work and include access to:

- systems and equipment to effect changes
- appropriate manuals and specifications
- relevant enterprise policies.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN407 Cut over customer premises equipment major upgrades

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to cut over major equipment and network upgrades in customer premises, and test and rectify problems.

It applies to individuals working at a supervisory level who may be in charge of installation and maintenance teams responsible for new installations and upgrades of telecommunications customer premises equipment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for cut over	1.1 Obtain relevant legislation, codes, regulations and standards for compliance when conducting work 1.2 Notify customer for site access, security arrangements and location details of customer equipment for major upgrade 1.3 Identify site hazards and notify appropriate personnel to make site safe

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Prepare cut over plan and seek approval from customer 1.5 Complete functional testing of new systems and equipment prior to cut over to minimise system downtime 1.6 Notify network carrier of cut over details to prevent unnecessary alarm call-outs and reports 1.7 Organise system back-up with support personnel
2. Cut over system and equipment into service	2.1 Conduct cut over works for major system upgrade according to cut over plan with minimal disruption to customer service according to work health and safety (WHS) and environmental requirements 2.2 Conduct tests according to technical manuals and specifications to complete installation task 2.3 Analyse test results to verify system compatibility and interoperability with existing system 2.4 Rectify any problems, if required
3. Finalise work and clean up worksite	3.1 Complete documentation containing installation details and test records 3.2 Amend site records to show existing equipment layout 3.3 Organise customer training in the new or modified system 3.4 Clean up and restore site to customer satisfaction 3.5 Collect and dispose of waste material and debris according to environmental requirements 3.6 Notify customer of job completion to obtain sign-off and present with a copy of documentation

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Writing	1.4, 3.1, 3.2, 3.6	• Completes workplace documentation accurately using appropriate form and vocabulary for intended audience
Oral Communication	1.2, 1.3, 1.6, 3.6	• Conveys specific messages efficiently and uses an appropriate tone and vocabulary for intended audience

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Numeracy	2.3	• Interprets numerical information to assist decision-making
Navigate the world of work	1.1-1.3, 2.1, 2.2, 3.4, 3.5	• Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements relevant to own work context
Interact with others	1.4, 1.7, 3.3	• Selects appropriate form, channel and mode of communication when liaising with customers and personnel on technical and operational matters
Get the work done	1.4, 1.5, 1.7, 2.1, 2.2, 2.4, 3.3	• Considers a range of complex factors when planning and completing tasks to ensure work is completed accurately and safely • Applies problem-solving processes to determine solutions for less predictable problems • Recognises and anticipates a range of problems, actively looking for early warning signs and implementing contingency plans when appropriate • Uses digital technologies and systems to complete required tasks

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN407 Cut over customer premises equipment major upgrades	ICTTEN4073A Cut over customer premises equipment major upgrades	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN407 Cut over customer premises equipment major upgrades

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- develop and implement an effective cut over plan
- identify and organise resources including customer resources and access as necessary to complete cut over
- conduct cut over and relevant tests according to work health and safety (WHS) and environmental requirements
- interpret test results to identify and resolve problems
- finalise administrative tasks and initiate training.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline cut over procedures
- define customer premises' equipment CPE
- illustrate features and operating requirements of test equipment
- outline information required to operate equipment according to a test specification
- outline legislation, codes of practice and other formal agreements that impact the work activity
- explain manufacturer's requirements for safe operation of equipment
- describe specific work health and safety (WHS) requirements relating to activity and site conditions
- explain test methods and performance requirements
- describe typical issues and challenges that occur on site.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications network engineering field of work and include access to:

- a site where cut over can be conducted
- plant, tools and equipment currently used in the industry
- relevant regulatory and equipment documentation impacting work activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN408 Complete equipment and software upgrades

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to upgrade telecommunications equipment and software in service provider networks and customer premises, and may apply to switching, transmission, radio, and computer networks using cable, optical fibre, radio, microwave and satellite transmission.

It applies to individuals who supervise installation and maintenance teams involved in new installations or maintenance, upgrades and cut overs of emerging technologies in IP-based telecommunications networks.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for upgrade activity	1.1 Obtain relevant legislation, codes, regulations and standards for compliance when conducting work 1.2 Contact customer for site access, security arrangements and location details of equipment for upgrade 1.3 Identify site hazards and notify appropriate personnel to make

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ELEMENT	PERFORMANCE CRITERIA
	site safe 1.4 Prepare an upgrade plan against work order and seek approval from customer 1.5 Organise system back-up from support personnel 1.6 Obtain tools and test equipment and check for accuracy and safety 1.7 Allocate specific tasks according to the skill mix of staff involved 1.8 Run test plan on current equipment and identify and rectify problems in consultation with planners 1.9 Complete functional testing of new systems and equipment prior to upgrade to minimise system downtime 1.10 Analyse test results to predict compatibility and interoperability issues of equipment and systems prior to the upgrade work
2. Undertake upgrade	2.1 Implement upgrade according to design specification, following work health and safety (WHS) and environmental requirements 2.2 Follow procedures for upgrade of network in sequential order as defined in instruction manuals 2.3 Monitor progress of upgrade periodically to ensure plans in relation to time and duration are being met 2.4 Notify planner of problems encountered with detail of the impact on the upgrade plan 2.5 Abort upgrade and implement contingency plan if upgrade plan cannot be realised without major disruption to network 2.6 Monitor system response during upgrade and take action according to instructions provided
3. Test upgrade for acceptance	3.1 Undertake tests according to predetermined test plan 3.2 Analyse test results and verify against specified performance levels 3.3 Escalate problems encountered according to enterprise policy 3.4 Invoke reversion procedure to pre-upgrade state, if directed by planners, according to enterprise policy 3.5 Record upgrade test results and provide to network management group 3.6 Run post-upgrade routines according to documented

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ELEMENT	PERFORMANCE CRITERIA
	procedures
4. Monitor post-upgrade performance	4.1 Conduct ongoing tests to ensure success of upgrade 4.2 Monitor relevant alarms to measure impact of upgrade 4.3 Review customer complaints to assess impact of upgrade on customer satisfaction
5. Finalise administrative work and clean up worksite	5.1 Complete relevant work documentation and administrative tasks according to enterprise policy 5.2 Amend site records to show upgraded equipment layout 5.3 Organise customer training in the new or modified system 5.4 Clean up and restore site to customer satisfaction 5.5 Collect and dispose of waste material and debris according to environmental requirements 5.6 Declare asset ready for use 5.7 Notify customer of upgrade job completion to obtain sign-off of work order and present with a copy of documentation

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	2.1, 2.2, 2.6, 4.3	• Interprets and analyses complex technical information
Writing	1.4, 3.5, 5.1, 5.2, 5.7	• Employs appropriate vocabulary and tone to convey specific information to different audiences
Oral Communication	1.2, 2.4, 5.7	• Conveys specific messages efficiently and uses an appropriate tone and vocabulary for intended audience
Numeracy	1.10, 3.2, 3.5	• Performs calculations to analyse data and records results in required format
Navigate the world of work	1.1-1.3, 1.5, 1.6, 2.1, 2.2, 3.3, 3.4, 3.6, 5.1, 5.4, 5.5	• Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements relevant to own work context
Interact with	1.4, 1.5, 1.7, 1.8,	• Selects appropriate form, channel and mode of

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others	2.4, 5.4	communication when liaising with customers and personnel on technical and operational matters
Get the work done	1.7-1.10, 2.3, 2.5, 2.6, 3.1-3.6, 4.1, 4.2, 5.3, 5.6	• Organises, plans and sequences own workload and schedules work activities of others • Applies problem-solving processes and reviews impact to ensure solutions or contingency plans are effective • Uses digital technologies and systems to complete work tasks

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN408 Complete equipment and software upgrades	ICTTEN4076A Complete equipment and software upgrades	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN408 Complete equipment and software upgrades

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- analyse implications of hardware and software upgrade on remainder of the network
- identify components of the upgrade process
- prepare an upgrade plan and organise system back-up
- run test plan and analyse test results
- implement upgrade according to work health and safety requirements
- monitor progress of upgrade periodically using both vendor- and enterprise-specific monitoring tools
- implement contingency plan when required, and analyse alarms and alarm conditions
- escalate unresolved problems and review customer complaints to assess impact of upgrade
- make necessary arrangements with the customer for site access and training.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain alarms used to monitor operation of computer software systems
- explain use of back-up systems
- illustrate common upgrades and post-upgrade routines
- describe escalation and outage procedures
- investigate network management systems
- outline telecommunications networks and equipment
- identify telecommunications monitoring tools
- describe telecommunications test equipment and test set-ups
- describe telecommunications wiring practices.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- a site where upgrade may be conducted
- equipment, software, test and monitoring equipment currently used in industry
- relevant regulatory, equipment, enterprise and vendor documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN409 Commission an electronic system

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to commission an electronic system with applications, including cellular telemetry, voice over IP (VoIP), radio frequency identification (RFID), supervisory control and data acquisition (SCADA) networks and SCADA security, telephony, data, video, IP television (IPTV) and multimedia.

It applies to individuals who may work as field officers and technicians employed by telecommunications carriers, service providers or contractors.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to commission electronic system	1.1 Prepare for work following work health and safety (WHS) requirements 1.2 Organise resources based on existing and potential site hazards 1.3 Contact customer or network operations personnel for site access and network specifications 1.4 Determine function and requirements of electronic system from

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ELEMENT	PERFORMANCE CRITERIA
	specifications 1.5 Identify potential security threats and vulnerability where remote monitoring and control via public telecommunications network or internet are used, and report to appropriate personnel 1.6 Verify installed electronic system and associated cabling conform to specifications, and assess compatibility of system units 1.7 Establish commissioning dates with all parties and establish planned outage 1.8 Check suitability and calibration status of test equipment 1.9 Produce a preliminary commissioning plan according to manufacturer's instructions and enterprise guidelines for discussion with the customer
2. Organise planned outages	2.1 Negotiate outage times with appropriate groups and affected customers to minimise disruptions 2.2 Arrange for emergency communications based on contingency plans 2.3 Notify alarm management centre of planned action 2.4 Obtain authority to proceed from relevant control centre and notify customers affected by the outage
3. Perform commissioning procedures	3.1 Configure electronic system parameters and install software according to manufacturer’s specifications and customer requirements 3.2 Conduct tests according to manufacturer’s specifications and industry practice 3.3 Conduct cut over according to project design and industry practice in consultation with appropriate personnel 3.4 Conduct a security audit, including remote threat analysis in applications where the public telecommunications network or internet is linked to the overall electronic system
4. Finalise commissioning	4.1 Record configuration information and update relevant databases according to enterprise and network guidelines 4.2 Notify appropriate person of commissioning results and work completion 4.3 Complete administrative tasks according to industry practice and enterprise guidelines

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.4	• Interprets complex information to determine job requirements
Writing	1.9, 4.1	• Completes technical workplace documentation using vocabulary and form appropriate to intended audience
Navigate the world of work	1.1, 1.5-1.7, 4.1, 4.3	• Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements relevant to own work context
Interact with others	1.3, 1.5, 1.6, 2.1, 2.3, 2.4, 4.2	• Collaborates and negotiates with others to achieve specific goals • Selects appropriate form, channel and mode of communication when liaising with customers and personnel on technical and operational matters
Get the work done	1.2, 1.4, 1.7, 1.8, 1.9, 2.2, 3.1-3.4	• Considers a range of complex factors when completing set tasks to ensure work is completed accurately and safely • Recognises and anticipates a range of problems, actively looking for early warning signs and implementing contingency plans when appropriate • Uses digital technologies and systems to complete required tasks

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTTEN409 Commission an electronic system	ICTTEN4078A Commission an electronic system	Updated to meet Standards for Training Packages.	Equivalent unit

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Links

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Assessment Requirements for ICTTEN409 Commission an electronic system

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- effectively negotiate arrangements for commissioning
- accurately configure electronic equipment and system parameters
- commission electronic system according to specifications and following work health and safety (WHS) requirements
- deal with faults and problems and provide solutions
- identify potential security threats and vulnerability.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain acceptance testing
- formulate a commissioning procedure and commissioning tests for an electronic system
- identify electrical and optical properties to be measured
- evaluate an extensive range of networking equipment
- outline legislation and licensing associated with installation of telecommunications equipment
- outline network operation procedures
- explain power requirements and electrical safety
- explain setup and operation of test equipment applicable to a wide range of measurements
- outline transmission type and signals that may be encountered.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- sites on which installation and commissioning procedures may be conducted
- relevant regulatory and equipment documentation
- testing equipment currently used in industry.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN410 Locate, diagnose and rectify faults

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to locate, diagnose and rectify faults in telecommunications networks.

It applies to individuals who may work as telecommunications officers, communications cablers, or installers of customer premises' equipment, for optical and radio frequency (RF) equipment, multimedia and IP networks.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan to locate and rectify fault	1.1 Prepare for given work according to relevant legislation, work health and safety (WHS) regulations, codes, standards and identified hazards 1.2 Arrange site access according to required procedure 1.3 Obtain information on the nature of fault from the customer 1.4 Obtain suitable testing tools and equipment and specify personal

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ELEMENT	PERFORMANCE CRITERIA
	protective equipment 1.5 Conduct fault-finding using methodical and safe practices suitable for system and problem type
2. Locate and diagnose fault	2.1 Conduct appropriate test to identify type of fault 2.2 Isolate fault progressively to remove likely variables from assessment 2.3 Locate fault without undue interruptions to customer activity, in the shortest possible time 2.4 Notify customer of findings
3. Rectify fault	3.1 Determine options to rectify fault, and present options to customer 3.2 Advise customer of costs of any repair not covered by service agreement 3.3 Rectify fault if in agreement with client 3.4 Conduct work in a manner which is safe for repairer and customer 3.5 Refer any unresolved faults to other parties for resolution or escalation if required
4. Complete documentation and clean up worksite	4.1 Advise customer of successful fault clearance and secure sign-off 4.2 Complete all records 4.3 Complete reports to justify fault diagnosis and rectification methodology, if required 4.4 Remove all waste and debris from worksite and dispose of them according to environmental requirements 4.5 Restore any changes made to worksite during fault repair to the customers satisfaction

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description

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Writing	4.1, 4.2, 4.3	• Completes technical workplace documentation using appropriate language and form to meet specific purpose
Oral Communication	1.3, 2.4, 3.2	• Articulates specific requirements clearly and checks understanding • Uses questioning and active listening to obtain required information
Numeracy	2.1	• Interprets numerical data from network tests
Navigate the world of work	1.1, 1.2, 3.4, 4.4, 4.5	• Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements relevant to own work context
Interact with others	1.3, 3.1, 3.3, 3.5, 4.1	• Selects appropriate form, channel and mode of communication when liaising with customers and personnel on technical and operational matters
Get the work done	1.2, 1.4, 1.5, 2.1, 2.2, 2.3, 3.1, 3.3	• Plans and implements tasks in line with organisational expectations, legislative requirements and work role • Recognises and anticipates a range of problems, actively looking for early warning signs and implementing contingency plans when appropriate • Uses digital technologies and systems to complete required tasks

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN401 Locate, diagnose and rectify faults	ICTTEN4081A Locate, diagnose and rectify faults	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN410 Locate, diagnose and rectify faults

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- effectively identify different faults
- establish context and background information, and determine and rank likely causes of fault
- obtain suitable tools and equipment and apply simple checks, tests and fault-finding methodology
- apply recommended means to rectify fault
- comply with all related work health and safety (WHS) requirements and work practices
- ensure customer and relevant personnel are informed of progress.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- evaluate various fault-finding techniques for different networking situations
- specify and evaluate test equipment used for fault finding
- specify safety standards required when testing different types of systems
- outline common network faults and their rectification
- explain the value of specific regulatory and other documentation required when testing and reporting on test results.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- an appropriate site
- test and related equipment currently used in industry
- relevant technical specifications and requirements
- regulatory and site-related documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN411 Monitor, analyse and action telecommunications network alarms

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to diagnose problems, restore a network, normalise an alarm system and examine the impact on a network.

It applies to individuals who are proficient communicators, excellent trouble-shooters and who have a clear understanding of network alarm systems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan response to network alarm	1.1 Determine alarm severity and specific network elements affected from presentation of alarm 1.2 Assess likely impact to client and network of the alarm 1.3 Notify the network operating centre (NOC) and other relevant parties of alarm condition 1.4 Prioritise actioning of alarms according to existing service level

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ELEMENT	PERFORMANCE CRITERIA
	agreement obligations and enterprise policy 1.5 Assess impact of any outage issues and major customers affected 1.6 Provide information to and seek advice from other relevant parties in identifying the problem and cause of the alarm condition 1.7 Diagnose likely cause of alarm condition using established methodical strategies 1.8 Escalate diagnosis to higher level fault clearance unit according to enterprise policy where necessary
2. Arrange rectification of network problem	2.1 Implement enterprise policy relating to outages as required 2.2 Rectify network problems when appropriate capability and time constraints can be met 2.3 Enact escalation procedures according to enterprise policy 2.4 Make all alarm data and diagnosis available to other areas with responsibility and jurisdiction for network restoration 2.5 Provide clear and concise instructions to field staff to facilitate all repair efforts 2.6 Monitor progress of the network repair effort 2.7 Apply enterprise policy in relation to alarms requiring no further action
3. Complete alarm clearance tasks	3.1 Reset alarms following network restoration 3.2 Notify all relevant parties of problem rectification 3.3 Undertake appropriate cause and effect studies to prevent re-occurrence of problem 3.4 Complete administrative tasks and recommend any changes required by the enterprise quality assurance system

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.4, 1.8, 2.1, 2.3,	• Recognises and interprets complex technical data and procedures to determine job requirements

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	2.7, 3.4	
Writing	1.3, 2.5, 3.2, 3.4	• Uses clear, specific and industry-related terminology to produce and update workplace documentation
Oral Communication	1.3, 2.5, 3.2	• Articulates requirements clearly and concisely to provide advice and guidance to others and to liaise with technical personnel working across different levels and in different contexts • Uses well-developed listening and questioning techniques to confirm understanding
Numeracy	1.1	• Uses mathematical formulae to interpret numerical data
Interact with others	1.6, 2.4	• Actively identifies requirements of important communication exchanges, selecting appropriate channels, format, tone and content to suit purpose and audience
Get the work done	1.1, 1.2, 1.4, 1.5, 1.7, 1.8, 2.1, 2.2, 2.6, 3.1, 3.3, 3.4	• Understands key principles and concepts underpinning the design and operation of digital systems and tools, and applies these when troubleshooting existing technology and when seeking to understand the potential of new technology • Works logically and systematically to monitor, analyse and action job priorities • Implements actions according to a predetermined plan, making adjustments if necessary • Makes decisions quickly and intuitively in familiar situations requiring immediate attention, drawing on past experience to identify key variables and determine the best course of action • Uses analytical processes to decide on a course of action, establishing criteria for deciding between options and seeking input and advice from others when necessary

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN411 Monitor, analyse and action telecommunication	ICTTEN4085A Monitor, analyse and action telecommunication	Updated to meet Standards for Training	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
s network alarms	s network alarms	Packages.	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN411 Monitor, analyse and action telecommunications network alarms

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- monitor and analyse a range of network alarms including use of fault history and ranking of likely causes
- ensure customers and relevant personnel are appropriately notified of network status
- undertake and monitor network repairs
- plan and coordinate actioning of network alarms.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- define purpose of escalation policies and procedures for network alarm systems
- describe installed telecommunications systems and equipment
- explain principles and use of path protection
- outline key components of a telecommunications network
- evaluate commonly used test equipment and test procedures
- outline typical problems and challenges that arise in Network Operations Centres (NOCs) and in the field
- describe typical systems and procedures for monitoring alarms.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

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- sites on which local and remote monitoring and analysis of network alarms may be conducted
- manufacturer's technical documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN412 Undertake routine maintenance of the telecommunications network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to perform routine maintenance of network plant and equipment in various telecommunications switching and transmission environments, including wide area networks (WAN), virtual private networks (VPN) and core networks, using wireless, optical, broadband and Next Generation Networking (NGN) technologies.

It applies to individuals working as field officers or technicians from carriers, contractors and other service providers.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan routine maintenance	1.1 Obtain relevant legislation, codes, regulations and standards for the given work 1.2 Determine network elements requiring maintenance, and maintenance details from manufacturer's equipment manual

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ELEMENT	PERFORMANCE CRITERIA
	1.3 Notify the Network Operations Centre (NOC) of proposed maintenance schedule and maintenance details to minimise disruption to the network 1.4 Assess potential impact of proposed maintenance on customers and network, and plan for possible outage or deferral of maintenance 1.5 Obtain necessary tools, test equipment and resources to undertake maintenance 1.6 Produce a written schedule of planned routine maintenance 1.7 Negotiate schedules and access with the customer, and find out where equipment to be maintained is located on customer premises 1.8 Ascertain and record network stability to determine network performance
2. Undertake planned maintenance	2.1 Conduct routine maintenance tasks following work health and safety (WHS) and environmental requirements, and record results 2.2 Escalate unresolved faults according to established enterprise procedure 2.3 Test network equipment for required performance following routine maintenance 2.4 Check operation of associated network equipment to ensure the maintenance did not generate other faults or alarms
3. Report on routine maintenance and document results	3.1 Notify all relevant parties of results of the routine maintenance 3.2 Update routine maintenance logs and record other additional work for inclusion in the next cycle of maintenance 3.3 Complete administrative tasks and recommend any changes as required by the enterprise quality assurance system 3.4 Notify NOC of job completion and obtain sign-off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.2, 2.2, 3.3	• Recognises and interprets plans, specifications, complex technical data and procedures to determine

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		job requirements
Writing	1.3, 1.6-1.8, 2.1, 3.1-3.4	• Uses clear, specific and industry-related terminology to produce and update workplace documentation
Oral Communication	1.3, 1.7, 3.1, 3.4	• Articulates requirements clearly and concisely to provide advice and guidance to others and to liaise with technical personnel working across different levels and in different contexts • Uses well-developed listening and questioning techniques to confirm understanding
Navigate the world of work	2.1	• Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements relevant to own work context, identifying improvement opportunities where appropriate
Interact with others	1.3, 1.7	• Selects and uses appropriate conventions and protocols when communicating with customers and technical staff in a range of work contexts
Get the work done	1.1, 1.2, 1.4, 1.5, 1.8, 2.2-2.4	• Formulates plans and implements actions according to plan, making adjustments if necessary • Works logically and systematically to monitor, analyse and action job priorities • Makes decisions quickly and intuitively in familiar situations requiring immediate attention, drawing on past experience to identify key variables and determine the best course of action • Uses analytical processes to decide on a course of action, establishing criteria for deciding between options and seeking input and advice from others when necessary • Uses digital technologies and systems to install software, and for data entry and storage

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN412 Undertake routine maintenance of the telecommunications network	ICTTEN4086A Undertake routine maintenance of the telecommunications network	Updated to meet Standards for Training Packages.	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN412 Undertake routine maintenance of the telecommunications network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- plan a detailed routine maintenance schedule
- conduct and record routine maintenance activities procedures and techniques
- test network equipment and analyse results
- carry out works in compliance with site risk controls, work health and safety (WHS), environmental, quality and communication requirements.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe computer systems required to facilitate a routine maintenance check of a telecommunications network
- explain the operation of network alarm systems
- describe the function and purpose of network management systems
- outline key components of a telecommunications network equipment and architecture, and their function including:
  - switching
  - mobile communications
  - satellite
  - transmission
  - antennas
  - radio frequency
  - basic telephony

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- identify and specify telecommunications test equipment, test configurations, and analysis of results for a range of telecommunications network problems
- describe WHS risks associated with routine maintenance tasks
- explain telecommunications wiring practices
- explain the use of a scheduler
- describe the importance of customer relations when dealing with clients, in particular, obligations and expectations of the technician
- describe the operation, application and characteristics of digital logic integrated circuits and installation packages
- outline the importance of enterprise policies and procedures for:
  - escalation of issues
  - enterprise information systems

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- sites on which routine maintenance may be conducted
- maintenance tools and test instruments currently used in industry
- relevant regulatory and equipment documentation impacting maintenance activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN413 Undertake remote diagnosis and repair of network faults

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to undertake fault diagnostic and repair strategies for working with remote network equipment.

It applies to individuals working as field technicians, remotely accessing the network and the Network Operation Centre (NOC) which controls the coordination of remote network activities.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Diagnose remote faults	1.1 Install remote access software on notebook computers 1.2 Verify network fault by analysing relevant data 1.3 Investigate context and background information relevant to the network fault 1.4 Source appropriate documentation and test equipment relevant to

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ELEMENT	PERFORMANCE CRITERIA
	the network fault 1.5 Conduct appropriate tests and analyse results 1.6 Diagnose network faults using established methodical strategies in a timely fashion without disruption to other services
2. Plan remote repair	2.1 Assess involvement level of the NOC in planning the repair 2.2 Plan for any necessary outages and notify customers 2.3 Develop repair strategies to clear fault 2.4 Develop a strategy for rerouting customer traffic if applicable 2.5 Advise on-site personnel of required work and clearly communicate the repair strategy
3. Repair fault	3.1 Initiate remote repair strategies to reconfigure or repair remote equipment in a manner safe to self, fellow workers, network equipment and public 3.2 Inform customers of repair progress where fault has caused degradation of service or outage 3.3 Escalate unresolved faults according to established enterprise procedure 3.4 Test remote repair for required performance 3.5 Assess ongoing network performance and the likelihood of further problems
4. Report remote diagnosis and repair and document results	4.1 Notify all relevant parties of results of remote diagnosis and repair 4.2 Record details relating to any outage according to enterprise procedures 4.3 Complete all relevant documentation and recommend any changes required by the enterprise quality assurance system

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description

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Reading	1.2, 1.3, 3.3, 4.2, 4.3	• Recognises and interprets complex technical data, procedures, equipment, system manuals and specifications
Writing	2.2-2.5, 3.2, 4.1-4.3	• Uses clear, specific and industry-related terminology to produce and update workplace documentation and make recommendations
Oral Communication	2.2, 2.5, 3.2, 4.1	• Articulates clearly and concisely to provide advice and guidance to technical personnel working across different levels and in different contexts • Uses well-developed listening and questioning techniques to confirm understanding
Numeracy	1.2, 1.5	• Interprets a wide variety of numerical readings and data
Navigate the world of work	3.1, 3.3, 4.2	• Takes personal responsibility for adherence to legal and regulatory responsibilities, and enterprise policies and procedures relevant to own work • Alerts others of issues that may affect self or others, with specific reference to safety
Interact with others	2.2, 3.2, 4.1	• Selects and uses appropriate conventions and protocols when communicating with customers and technical staff in a range of work contexts
Get the work done	1.1, 1.3-1.6, 2.1-2.3, 3.1, 3.3-3.5, 4.3	• Understands key principles and concepts underpinning design and operation of digital systems and tools, and applies these when troubleshooting existing technology • Works logically and systematically to monitor, analyse and action job priorities • Implements actions according to a predetermined plan, making adjustments if necessary • Makes decisions quickly and intuitively in familiar situations requiring immediate attention, drawing on past experience to identify key variables and determine the best course of action • Uses analytical processes to decide on a course of action, establishing criteria for deciding between options and seeking input and advice from others when escalating difficulties

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Unit Mapping Information

Code and title **current version**	**Code and title** **previous version**	**Comments**	**Equivalence status**
ICTTEN413 Undertake remote diagnosis and repair of network faults	ICTTEN4087A Undertake remote diagnosis and repair of network faults	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN413 Undertake remote diagnosis and repair of network faults

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- communicate effectively with relevant parties, using appropriate technical and non-technical language
- diagnose and identify faults, including using fault history and ranking likely causes
- plan and coordinate repair of network faults
- apply enterprise escalation and outage procedures following related work health and safety (WHS) requirements and work practices
- ensure customers and others are kept notified of works progress.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe telecommunications systems and equipment and technologies likely to be encountered in remote networks
- explain principles and use of path protection
- outline key components of a telecommunications network
- describe test equipment and test procedures required for determining network faults
- evaluate test results and specify solutions
- explain typical problems and challenges that arise in Network Operations Centres (NOCs) and in the field.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- sites on which remote diagnosis and repair of network may be conducted
- test equipment currently used in industry
- manufacturer's technical documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN414 Repair telecommunication system faults

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to examine a customer report or a maintenance schedule, and diagnose faults which may be in optical, computer, radio, satellite, security or radio frequency identification (RFID) systems found in customer and service provider access networks.

It applies to individuals working as field officers, technicians or technical supervisors from carriers, contractors or other service providers.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for equipment repairs	1.1 Obtain relevant legislation, codes, regulations and compliance standards for conducting work 1.2 Identify hazards, make worksite safe according to relevant safety legislation and company work practices and use personal protective equipment 1.3 Notify customer and other appropriate personnel of work, and

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ELEMENT	PERFORMANCE CRITERIA
	arrange for site access and security where required 1.4 Obtain fault details to determine type of system fault 1.5 Determine the type of repair required according to enterprise guidelines, site requirements and type of equipment, and arrange for additional technical support as appropriate 1.6 Confirm if warranties and service agreements covering identified repairs exist 1.7 Obtain tools and necessary hardware and ensure replacement parts and material is delivered to the worksite at the required time
2. Repair fault	2.1 Follow work health and safety (WHS) and environmental requirements when carrying out repair or replacement tasks 2.2 Notify appropriate personnel of service disruption and remove network equipment from service 2.3 Diagnose the fault and carry out repair work on equipment according to manufacturer's or enterprise procedures 2.4 Test equipment to manufacturer's specifications following repairs and return to live operation for testing overall performance
3. Complete repair work documentation and administrative tasks	3.1 Notify customer and other appropriate personnel of completion of repair work according to enterprise guidelines 3.2 Record any changes to equipment and store according to enterprise guidelines 3.3 Dispose of waste and debris from worksite according to environmental requirements and enterprise guidelines 3.4 Complete administrative tasks and make recommendations for improvements under quality assurance system

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.5, 1.6, 2.3, 3.1, 3.3, 3.4	• Recognises and interprets complex technical documentation and standards to determine job requirements

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Writing	1.3, 2.2, 3.1, 3.2, 3.4	• Uses clear, specific and industry-related terminology to produce and update workplace documentation
Oral Communication	1.3, 2.2, 3.1	• Provides information using language appropriate to audience and context • Uses well-developed listening and questioning techniques to confirm understanding
Numeracy	1.5	• Uses mathematical formulae to interpret numerical data including equipment specifications
Navigate the world of work	1.2, 2.1, 3.3	• Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work context
Interact with others	1.3, 2.2, 3.1	• Selects and uses appropriate conventions and protocols when communicating with customers and technical staff in a range of work contexts
Get the work done	1.1, 1.3-1.5, 1.7, 2.3, 2.4	• Understands key principles and concepts underpinning design and operation of digital systems and tools, and applies these when troubleshooting existing technology • Works logically and systematically to monitor, analyse and action job priorities • Implements actions according to a predetermined plan, making adjustments if necessary • Makes decisions quickly and intuitively in familiar situations requiring immediate attention, drawing on past experience to identify key variables and determine the best course of action • Initiates standard procedures when responding to familiar problems within immediate context

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN414 Repair telecommunication system faults	ICTTEN4102A Repair telecommunication system faults	Updated to meet Standards for Training Packages.	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN414 Repair telecommunication system faults

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- communicate effectively with customers and other personnel, using appropriate technical and non-technical language to ensure understanding
- diagnose and identify faults methodically, using fault history and recognition of likely causes
- repair telecommunication equipment according to manufacturer's or enterprise procedures, applying related work health and safety (WHS) requirements and work practices
- test equipment following repairs and put back into commission
- communicate with personnel and customers during and upon completion of works.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe anti-static procedures required to protect equipment under repair
- outline enterprise policies and procedures
- summarise fault diagnosis techniques
- describe general fault-finding techniques and test equipment
- outline work health and safety (WHS) requirements and work practices
- identify commonly used and emerging products
- explain safety requirements and standards
- summarise telecommunications network and equipment fault types and rectification
- describe telecommunications network and equipment types
- provide a detailed explanation of test equipment.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- sites on which diagnosis and repair of communication equipment may be conducted
- test equipment currently used in industry
- manufacturer's technical documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN415 Install and configure internet protocol TV in a home network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to arrange a secure internet protocol (IP) network for a customer.

It applies to individuals who install Next Generation Networks (NGNs). These IP networks provide fast internet, voice over internet protocol (VoIP), IPTV and internet TV services.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to implement IPTV in a home network	1.1 Obtain and clarify work health and safety (WHS) requirements and risk control measures and procedures for a given work area, with appropriate personnel 1.2 Evaluate existing customer home network equipment for operational status
2. Design IPTV integration to a home	2.1 Prepare a configuration layout integrating IPTV to existing customer network using IPTV network elements to provide optimum

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ELEMENT	PERFORMANCE CRITERIA
network to meet customer requirements	video delivery service 2.2 Select IPTV network elements to provide optimum video delivery service 2.3 Obtain configuration instructions for network elements 2.4 Design connection plan to integrate customer network elements and optimise system performance 2.5 Identify any connection problems and amend design plan
3. Implement IPTV design plan to a home network	3.1 Interconnect network elements according to design plan using manufacturer's instructions and IP addressing schemes 3.2 Configure and test network elements to provide integrated IPTV to the existing system 3.3 Provide a free-to-air (FTA) connection over digital video broadcasting – terrestrial (DVB-T) to complement the IPTV service 3.4 Set up customer specific operations as required 3.5 Configure security measures in an IPTV network to protect against security threats 3.6 Troubleshoot home network according to manufacturer's specifications and escalate unresolvable items to the service provider
4. Complete and document network installation	4.1 Restore worksite to safe condition, according to established safety procedures 4.2 Record and store essential installation information 4.3 Notify appropriate personnel of completion of the task and obtain sign-off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 3.1	• Recognises and interprets complex technical specifications and related information
Writing	1.1, 2.4, 2.5, 4.2, 4.3	• Uses clear, specific and industry-related terminology to produce plans and update workplace documentation

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Oral Communication	4.3	• Articulates clearly and concisely to provide advice and guidance to customers and personnel • Uses well-developed listening and questioning techniques to confirm understanding
Navigate the world of work	1.1, 4.1	• Takes personal responsibility for adherence to organisational procedures and protocols, and legal and regulatory responsibilities relevant to own work
Get the work done	1.1, 1.2, 2.1-2.3, 2.5, 3.1-3.6	• Understands key principles and concepts underpinning design and operation of digital systems and tools, and applies these when troubleshooting existing technology • Works logically and systematically to monitor, analyse and action job priorities • Implements actions according to a predetermined plan, making adjustments if necessary • Makes decisions quickly and intuitively in familiar situations requiring immediate attention, drawing on past experience to identify key variables and determine the best course of action • Uses analytical processes to resolve a predictable range of network problems, establishing criteria for deciding between options and seeking input and advice from others when escalating difficulties

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN415 Install and configure internet protocol TV in a home network	ICTTEN4126A Install and configure internet protocol TV in a home network	Updated to meet Standards for Training Packages.	Equivalent unit

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Links

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Assessment Requirements for ICTTEN415 Install and configure internet protocol TV in a home network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- create and follow implementation plans for internet protocol television (IPTV)
- install relevant network hardware and software
- configure and test IPTV network according to specified guidelines
- integrate IPTV to existing network
- produce appropriate documentation
- implement secure network.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain competing video delivery over broadband networks
- outline current industry-accepted hardware and software products
- summarise IPTV configurations
- clarify IPTV protocols and encoding techniques
- summarise networking technologies, incorporating substantial depth in network operating systems and IP networks
- outline transmission technologies and protocols
- summarise video compression formats
- describe the common issue that affects home network performance.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- a site where installation and configuration of an IPTV network may be conducted
- equipment currently used in industry
- information on different protocols
- relevant technical information, legislative requirements and other site and project-related documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN416 Install, configure and test an internet protocol network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to select network elements to meet client business specifications, ensure interoperability within the network, apply network topologies, protocols and security issues, and troubleshoot when required.

It applies to individuals who carry out installation, maintenance and upgrade of information and communications technology (ICT) networks, and are employed by telecommunications or information technology networking provisioning companies.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to install IP network	1.1 Prepare for given work according to relevant legislation, work health and safety (WHS) regulations, codes and standards 1.2 Arrange site access according to required procedure 1.3 Review existing network design documentation to ensure it is current and complete

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Select components and network elements required to be installed to meet the technical requirements 1.5 Contact vendors and service suppliers to obtain specifications and availability of identified components 1.6 Develop plans, with prioritised tasks and contingency arrangements, for installation of components with minimum disruption to client 1.7 Liaise with appropriate person to obtain approval for the plans, including security clearance and timing
2. Install and configure IP network	2.1 Install and configure server hardware and software according to organisational and industry standards, following plans 2.2 Install and configure computer, other hardware and software, according to organisational and industry standards and plans 2.3 Install and configure other software required for the network to operate with security and integrity according to the plan
3. Test and reconfigure IP network	3.1 Test installed software and hardware, utilising available technical tools, to ensure all components are functioning as expected 3.2 Test the network to ensure it is functioning according to specifications 3.3 Resolve problems identified in the modified network
4. Complete documentation and clean worksite	4.1 Complete hardware and asset recording document in line with organisational requirements 4.2 Document installation, boot-up and configuration procedures according to organisational requirements 4.3 Tabulate test results and complete all user reports 4.4 Complete client report and notify of network status 4.5 Clean up and restore worksite to client's satisfaction 4.6 Secure sign-off from appropriate person

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance	Description

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	Criteria	
Reading	1.1-1.3, 2.1-2.3, 3.2, 4.1, 4.2	• Recognises and interprets technical, legislative and operational documentation to determine job requirements
Writing	1.5-1.7, 4.1-4.4	• Uses clear, specific and industry-related terminology to produce and update workplace documentation in predetermined formats
Oral Communication	1.5, 1.7, 4.4	• Clearly liaises with internal and external personnel on technical, operational and business related matters • Uses listening and questioning skills to confirm understanding for requirements
Numeracy	3.1-3.3	• Makes calculations required to take test measurements, interpret results and evaluate performance and interoperability of network
Navigate the world of work	1.1, 4.5	• Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work context • Recognises and follows explicit and implicit protocols and meets expectations associated with own role
Interact with others	4.5, 4.6	• Cooperates with others as part of familiar routine activities and contributes to specific activities requiring joint responsibility and accountability
Get the work done	1.2, 1.4, 1.6, 2.1-2.3, 3.1-3.3, 4.5	• Understands key principles and concepts underpinning design and operation of digital systems and tools, and applies these as required • Works logically and systematically to monitor, analyse and action job priorities • Implements actions according to a predetermined plan, making adjustments if necessary • Makes decisions quickly and intuitively in familiar situations requiring immediate attention, drawing on past experience to identify key variables and determine the best course of action • Recognises and anticipates an increasing range of familiar problems, their symptoms and causes, depending on differing operational contingencies, risk situations and environments

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Unit Mapping Information

Code and title **current version**	**Code and title** **previous version**	**Comments**	**Equivalence status**
ICTTEN416 Install, configure and test an internet protocol network	ICTTEN4198A Install, configure and test an internet protocol network	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN416 Install, configure and test an internet protocol network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- plan and prepare for the IP network installation task
- select network elements to meet client's business specifications
- install, configure and test network elements to ensure interoperability within the network
- apply network topologies, protocols and security issues
- apply solutions to defined network problems.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain client's business domain, business function and organisation
- describe current industry-accepted hardware and software products
- outline data and voice transmission technologies and protocols
- summarise networking technologies, incorporating substantial depth in some areas
- explain router-based network architectures.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- a site where network installation may be conducted
- field measurement equipment currently used in industry

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- network design documentation
- equipment specifications
- network components
- hardware and software
- a live network
- organisational guidelines
- networked (LAN) computers
- a wide area network (WAN) service point of presence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN417 Install, configure and test a router

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to undertake router installation and configuration, as part of an upgrade in an existing network or the implementation of a new network.

It applies to individuals who carry out installation, maintenance and upgrade of information and communication technologies (ICT) networks.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications networks engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to install router	1.1 Prepare for given work according to relevant legislation, work health and safety (WHS) regulations, codes and standards 1.2 Arrange site access according to required procedure 1.3 Ascertain network topology from technical requirements 1.4 Determine the internet protocol (IP) addressing scheme for the network topology

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ELEMENT	PERFORMANCE CRITERIA
	1.5 Evaluate network management and security requirements, with reference to current and future requirements 1.6 Select a router with appropriate features according to technical requirements 1.7 Choose cables, wireless application protocol (WAP), wide area network (WAN) connectors and other peripherals according to network and router specification, and WAN protocols
2. Install and configure router	2.1 Assemble router and peripherals according to manufacturer's requirements, enterprise guidelines and protocols 2.2 Connect communications cables and WAN connectors to the router and network 2.3 Configure router according to manufacturer's instructions and technical requirements, taking into account interoperability requirements with network components
3. Test router and reconfigure network	3.1 Test the router for connectivity across the network and for routing protocol functions 3.2 Adapt or modify predetermined router configuration, depending on outcome of tests 3.3 Review router in line with organisational requirements 3.4 Test router and peripherals according to manufacturer's instructions and technical requirements 3.5 Test hardware and router to ensure full functionality and interoperability 3.6 Reconfigure additional hardware as required 3.7 Make adjustments to network depending on test results
4. Complete documentation and clean worksite	4.1 Tabulate test results and complete all user reports 4.2 Complete report and notify client of network status 4.3 Clean up and restore worksite to client's satisfaction 4.4 Secure sign-off from appropriate person

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

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Skill	**Performance Criteria**	**Description**
Reading	1.1-1.3, 2.1, 2.3, 3.2, 3.3	• Recognises and interprets technical, legislative and operational documentation to determine job requirements
Writing	3.4, 4.1, 4.2	• Uses clear, specific and industry-related terminology to produce and update workplace documentation in predetermined formats
Oral Communication	4.2	• Clearly liaises with internal and external personnel on technical, operational and business related matters • Uses listening and questioning skills to confirm understanding for requirements
Numeracy	2.3, 3.1, 3.2, 3.4-3.7	• Undertakes test measurements, interprets results and evaluates performance and interoperability of network
Navigate the world of work	1.1, 4.3	• Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work • Recognises and follows explicit and implicit protocols and meets expectations associated with own role
Interact with others	4.4	• Cooperates with others as part of familiar routine activities and contributes to specific activities requiring joint responsibility and accountability
Get the work done	1.2-1.7, 2.1-2.3, 3.1-3.7	• Understands key principles and concepts underpinning design and operation of digital systems and tools, and applies these as required • Takes responsibility for own workload, negotiating some key aspects with others • Implements actions according to a predetermined plan, making adjustments if necessary • Makes decisions quickly and intuitively in familiar situations requiring immediate attention, drawing on past experience to identify key variables and determine the best course of action • Recognises and anticipates an increasing range of familiar problems, their symptoms and causes, depending on differing operational contingencies, risk situations and environments

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Unit Mapping Information

Code and title **current version**	**Code and title** **previous version**	**Comments**	**Equivalence status**
ICTTEN417 Install, configure and test a router	ICTTEN4199A Install, configure and test a router	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN417 Install, configure and test a router

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- plan and prepare for router installation task
- select router to meet client's business specifications
- install and test the router ensuring interoperability within the network, and applying router principles and technologies
- report on status of completed installation and seek sign-off and customer satisfaction
- use routers
- apply solutions to defined routing problems.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify and outline codes of practice for computing
- explain the effect of a router on delimiting broadcast traffic and on conserving bandwidth
- explain how dynamic routing algorithms or protocols create and maintain routing tables
- explain how to provide the network with redundant paths for reliability, and the way routers manage these paths
- summarise the following aspects of routers including:
  - basic router commands
  - configuration
  - clock rate
  - password protection of router
  - routing protocol
  - dynamic routing

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  - firewalls
  - functions
  - routing protocols and how they operate
  - tables
- describe router-based network architectures
- explain the use of routing tables in intelligent packet routing and switching.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- a site where router installation may be conducted
- field measurement equipment currently used in industry
- relevant router specifications
- technical requirements for a network
- router
- cabling
- networked (LAN) computers
- wide area network (WAN) service point of presence
- relevant equipment and organisational documentation.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN418 Install and test a radio frequency identification system

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required for installation of either a new logistical or security network or upgrade of an existing system.

It applies to individuals who integrate new and converging functionalities to information and communications technology (ICT) networks. They are employed by telecommunications and information technology networking provisioning companies specialising in radio frequency identification (RFID) technology.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to install specified RFID system	1.1 Prepare for given work according to relevant legislation, work health and safety (WHS) regulations, codes, and standards 1.2 Arrange site access according to required procedure 1.3 Choose the most suitable RFID system based on specifications and in consultation with appropriate person

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Evaluate options for equipment installation siting and antenna positioning to include effects of electromagnetic interference and shielding 1.5 Investigate causes of interference with RFID systems 1.6 Specify network element requirements for the installation and any training requirements for clients 1.7 Create a deployment plan including down times and advise the user group 1.8 Obtain all components and devices required for the RFID system
2. Install specified RFID system and resolve any faults	2.1 Install interrogators or readers according to given plan 2.2 Install tags and document correct procedures for locating and orienting tags 2.3 Install and undertake network configuration activities using relevant operating system and application upgrades to integrate RFID system into the overall network 2.4 Troubleshoot problems between interrogators or readers, tags and networks, including tuning for optimum performance and rectify any faults
3. Test RFID installation according to specification and standards	3.1 Test system installation according to design specifications and standards including optimum placement of tags, data transmission completeness and record outcomes 3.2 Carry out any changes 3.3 Validate changes or additions against specifications 3.4 Document the test results
4. Complete documentation in compliance with customer requirements and clean worksite	4.1 Complete all documentation for users according to the design and customer requirements 4.2 Complete report and notify client of network status and standards applying to the installation 4.3 Clean up and restore worksite to client's satisfaction 4.4 Secure sign-off from appropriate person

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

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Skill	**Performance Criteria**	**Description**
Reading	1.1-1.3, 2.1, 3.3, 4.1	• Recognises and interprets technical, legislative and operational documentation to determine job requirements
Writing	1.6,1.7, 2.2, 3.4, 4.1, 4.2	• Uses clear, specific and industry-related terminology to produce and update workplace documentation, including user and training documentation in required formats
Oral Communication	1.3, 1.6, 1.7	• Clearly liaises with internal and external personnel on technical, operational and business related matters • Uses listening and questioning skills to confirm understanding for requirements
Numeracy	3.1	• Undertakes test measurements, interprets results and evaluates performance and interoperability of RFID system
Navigate the world of work	1.1, 4.3	• Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work • Recognises and follows explicit and implicit protocols and meets expectations associated with own role
Interact with others	4.4	• Cooperates with others as part of familiar, routine activities and contributes to specific activities requiring joint responsibility and accountability
Get the work done	1.2-1.5, 1.8, 2.1-2.4, 3.1, 3.2	• Understands key principles and concepts underpinning design and operation of digital systems and tools, and applies these as required • Takes responsibility for own workload, negotiating some key aspects with others • Implements actions according to a predetermined plan, making adjustments if necessary • Makes decisions quickly and intuitively in familiar situations requiring immediate attention, drawing on past experience to identify key variables and determine the best course of action • Recognises and anticipates an increasing range of familiar problems, their symptoms and causes, depending on differing operational contingencies, risk situations and environments

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Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN418 Install and test a radio frequency identification system	ICTTEN4202A Install and test a radio frequency identification system	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN418 Install and test a radio frequency identification system

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- plan installation
- use basic research skills for adapting radio frequency identification (RFID) technologies to specified plan and design
- implement and verify RFID operations
- implement RFID architecture across a secure environment
- encode RFID tags and attach to items
- integrate RFID information into business applications
- configure network with IP addressing
- cable and test RFID network
- create technical and user documentation.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain the client business domain, business function and organisation
- describe common network cable types and connectors
- summarise compatibility issues and resolution procedures
- describe configuration of internet protocol (IP) networks
- describe current industry-accepted hardware and software products used in RFID systems
- explain desktop applications and operating systems as required
- summarise enterprise communication and training systems in relation to training and advising staff involved in deployment
- summarise network topologies

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- outline RFID technologies including:
  - network operating systems
  - protocols
  - interrogators and sensors
  - wireless technologies
  - cabling standards.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- a site where RFID installation may be conducted
- field measurement equipment currently used in industry
- relevant network element specifications
- technical requirements for an RFID network
- cabling
- networked (LAN) computers
- workstations
- RFID diagnostic software
- wide area network (WAN) service point of presence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN419 Implement and troubleshoot enterprise routers and switches

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to determine customer needs, use information communication technologies (ICT) to meet network requirements, rectify equipment errors and create appropriate workplace documentation.

It applies to individuals working as installers of internet protocol (IP) networks, enterprise network technicians, network administrators and other network support personnel.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Prepare for implementation of network routers and switches	1.1 Prepare for given job according to work health and safety (WHS) and environmental requirements with appropriate personnel 1.2 Identify safety hazards and implement risk control measures in consultation with appropriate personnel 1.3 Determine nature and scope of network routers, network switches and network resources from job briefs or appropriate

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ELEMENT	PERFORMANCE CRITERIA
	personnel 1.4 Select and obtain network services and network application requirements according to enterprise procedures 1.5 Obtain identified operating instructions, manuals, hardware and software testing methodologies 1.6 Consult appropriate personnel to ensure the task is coordinated effectively with others involved at the worksite
2 Implement network switches and routers	2.1 Configure routers and switches according to manufacturer's specifications and enterprise procedures 2.2 Determine network addressing scheme for network connectivity, and verify using calculations 2.3 Activate, and verify wide area network (WAN) links provide network connectivity 2.4 Enable network services and network applications to the network to complete network connectivity process 2.5 Set up traffic access and filtering according to enterprise procedures
3 Troubleshoot network switches and routers	3.1 Monitor network performance and isolate faults using diagnostic and analysis tools 3.2 Troubleshoot network and internet connectivity according to manufacturer's specifications and enterprise procedures
4 Document configuration and troubleshooting records	4.1 Restore work-site to safe condition according to established safety procedures 4.2 Record and store essential implementation information according to enterprise procedures 4.3 Notify appropriate personnel of completion of the task according to enterprise procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description

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Reading	1.1, 1.3, 1.4, 2.1, 2.5, 3.2, 4.2, 4.3	• Recognises and interprets technical, legislative and operational documentation to determine job requirements
Writing	1.1, 1.2, 4.2, 4.3	• Uses clear, specific and industry-related terminology to produce and update workplace documentation and in communications with relevant personnel
Oral Communication	1.1-1.3, 4.3	• Clearly liaises with personnel on technical matters • Uses listening and questioning skills to confirm understanding for requirements
Numeracy	2.2	• Interprets technical data and performs calculations to verify information
Navigate the world of work	1.1, 1.2, 4.1	• Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work, and draws attention to any issues that may affect self or others • Recognises and follows explicit and implicit protocols and meets expectations associated with own role
Interact with others	1.6	• Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective group interaction
Get the work done	1.4, 1.5, 2.1-2.5, 3.1, 3.2	• Understands key principles and concepts underpinning design and operation of digital systems and tools, and applies these as required including troubleshooting common network problems • Takes responsibility for planning and organising own workload, identifying ways of sequencing and combining elements for greater efficiency • Implements actions according to a predetermined plan, making adjustments if necessary • Makes decisions quickly and intuitively in familiar situations requiring immediate attention, drawing on past experience to identify key variables and determine the best course of action • Recognises and anticipates an increasing range of unexpected problems, their symptoms and causes on the basis of safety and specified work outcomes

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Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN419 Implement and troubleshoot enterprise routers and switches	ICTTEN4210A Implement and troubleshoot enterprise routers and switches	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN419 Implement and troubleshoot enterprise routers and switches

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- determine customer networking requirements
- configure routers and switches using hierarchical addressing over virtual local area networks (VLANs) to meet network link requirements
- enable and control access to network services and applications across the network
- diagnose and rectify network hardware and device configuration faults
- document configuration information, fault-finding history and remediation action.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- summarise access control lists
- give examples of characteristics of a typical enterprise including:
  - features and applications
  - work health and safety (WHS) procedures
  - record keeping procedures
  - switching and routing protocols and strategies:
    - hierarchical addressing
    - multilayer switching
    - routing protocols
    - VLAN routing
- summarise implementation of enterprise wide area networks (WAN) links
- explain network diagnostic and troubleshooting techniques
- describe network modelling

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- specify how to configure and activate network access and security measures
- describe the process of configuring switches and routers to enable local area networks (LAN) and WAN links
- describe the connection process for enterprise networks using WAN services and applications
- describe the purpose of maintaining enterprise network documentation
- summarise the process and importance of troubleshooting network faults and implementing recovery actions
- describe the use of a hierarchical internet protocol (IP) network address scheme
- select and use tools and equipment to analyse enterprise networks.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- a network facility and workstations
- operating instructions, installation documents and manuals
- hardware and software testing tools currently used in industry.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN420 Design, install and configure an internetwork

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to determine customer needs, create appropriate workplace documentation, connect and organise an internetwork according to design specifications, resolving technical problems as they arise.

It applies to individuals who design and install internet protocol (IP) networks including enterprise internetwork technicians, network administrators and network support personnel for large, medium and small office home office (SOHO) enterprises.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for design and installation of internetwork	1.1 Prepare for given work according to work health and safety (WHS) and environmental requirements with appropriate personnel 1.2 Identify safety hazards and implement risk control measures in consultation with appropriate personnel 1.3 Determine nature and scope of internetwork from job briefs and appropriate personnel

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Obtain operating instructions, manuals, hardware and software testing methodologies 1.5 Consult appropriate personnel to ensure the task is coordinated effectively with others involved at the worksite
2. Design enterprise internetwork	2.1 Produce enterprise internetwork topology after considering technical requirements, physical and financial constraints and expansion projections 2.2 Determine network devices and network resources, according to enterprise procedures 2.3 Produce internetwork design including network security and router and switch configurations to meet design specifications and enterprise procedures
3. Install and configure designed internetwork	3.1 Install network hardware to network topology design plan according to enterprise procedures 3.2 Determine network addressing scheme for network connectivity, and verify using calculations 3.3 Configure routers and switches to perform logical connection of the internetwork 3.4 Conduct connectivity and performance tests to verify network installation meets design specification 3.5 Troubleshoot internetwork and internet connectivity according to manufacturer's specifications and enterprise procedures
4. Complete and document network design and installation	4.1 Restore worksite to safe condition according to established safety procedures 4.2 Record and store essential design and installation information according to enterprise procedures 4.3 Notify appropriate personnel of completion of the task according to enterprise procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description

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Reading	1.1, 1.3, 2.2, 2.3, 3.1, 3.4, 3.5, 4.2, 4.3	• Recognises and interprets legislation, enterprise procedures, manuals and technical specifications to determine job requirements
Writing	2.1, 2.3, 4.2, 4.3	• Uses clear, specific and industry-related terminology to produce network documentation and maintain network records • Writes concisely when communicating with relevant personnel
Oral Communication	1.2, 4.3	• Negotiates with customers and peers to achieve design specifications • Uses listening and questioning skills to confirm understanding for requirements
Numeracy	3.2	• Interprets technical data and performs calculations to verify information
Navigate the world of work	1.1, 1.2, 2.2, 2.3, 3.1, 3.5, 4.1-4.3	• Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work, and draws attention to any issues that may affect self or others • Recognises and follows organisational procedures protocols and meets expectations associated with own role
Interact with others	1.3, 1.5	• Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective group interaction
Get the work done	1.4, 2.1, 2.3, 3.1, 3.3-3.5	• Understands key principles and concepts underpinning design and operation of digital systems and tools, and applies these as required including troubleshooting common network problems according to helpdesk procedures • Takes responsibility for planning and organising own workload, identifying ways of sequencing and combining elements for greater efficiency • Implements actions according to a predetermined plan, making adjustments if necessary • Makes decisions quickly and intuitively in familiar situations requiring immediate attention, drawing on past experience to identify key variables and determine the best course of action • Recognises and anticipates an increasing range of unexpected problems, their symptoms and causes, on the basis of safety and specified work outcomes

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Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN420 Design, install and configure an internetwork	ICTTEN4211A Design, install and configure an internetwork	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN420 Design, install and configure an internetwork

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- determine customer requirements
- design internetwork that uses advanced routing and addressing techniques
- install internetwork according to design specification
- configure network devices to meet design functionality
- document internetwork design, installation and configuration.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe enterprise work health and safety (WHS) procedures
- summarise open systems interconnect (OSI) layered communication model
- outline network requirements including:
  - applications
  - lifecycle
  - manageability
  - quality of service
- clarify network design concepts including:
  - business requirements
  - network topologies
  - physical and financial constraints
  - security
  - wired or wireless options

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- describe tool and equipment use
- outline troubleshooting components of this work including:
  - impact of network failure
  - maintenance
  - troubleshooting methodologies
- analyse impact of applications on traffic flow in the network
- describe network design methodologies used to design networks providing a range of services and applications found in larger networks
- define technical requirements, constraints and manageability issues for a given customer network
- identify and describe common tools and equipment used in internet work.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- a site where design and installation of an internetwork network may be conducted
- tools, equipment and materials currently used in industry
- relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN421 Apply advanced routing protocols to network design

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to use software tools, equipment, software and protocols to configure and troubleshoot network routers.

It applies to individuals who work cooperatively with others, interpret technical information accurately and work proficiently with information communication technology (ICT). Installers of internet protocol (IP), small and medium sized enterprise (SME) network technicians, network administrators and network support personnel complete this type of work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan to apply routing protocols	1.1 Prepare for given work according to work health and safety (WHS) and environmental requirements with appropriate personnel 1.2 Identify safety hazards and implement risk control measures in consultation with appropriate personnel 1.3 Determine nature and scope of network and network routing

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ELEMENT	PERFORMANCE CRITERIA
	requirements from job briefs and appropriate personnel 1.4 Determine hardware and software diagnostic test methodologies and testing resources according to enterprise procedures 1.5 Obtain operating instructions, manuals, hardware and software testing methodologies 1.6 Consult appropriate personnel to ensure task is coordinated effectively with others involved at the worksite
2. Build and test advanced routing	2.1 Set up router interfaces according to manufacturer's specifications and established procedures 2.2 Implement advanced routing protocols to achieve network design requirements 2.3 Implement classless addressing across a network to perform logical connectivity, and confirm using calculations 2.4 Troubleshoot network routing according to manufacturer's specifications and established procedures 2.5 Identify security threats and initiate control measures according to enterprise procedures
3. Complete and document advanced router installation	3.1 Restore worksite to safe condition according to established safety procedures 3.2 Record and store essential installation information according to enterprise procedures 3.3 Notify appropriate personnel of completion of the task according to enterprise procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.3, 2.1, 2.4, 2.5, 3.2, 3.3	• Recognises and interprets enterprise procedures, manuals and specifications to determine job requirements
Writing	1.2, 3.2, 3.3	• Uses clear, specific and industry-related terminology to develop network documentation and maintain network records

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		• Writes concisely when communicating with relevant personnel
Oral Communication	1.2, 1.3, 3.3	• Liaises and negotiates with customers and peers to achieve design specifications • Uses listening and questioning skills to confirm understanding for requirements
Numeracy	2.3	• Interprets technical data and performs calculations to verify information
Navigate the world of work	1.1, 1.4, 2.4, 2.5, 3.1-3.3	• Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work context and draws attention to any issues that may affect self or others • Recognises and follows organisational procedures and protocols and meets expectations associated with own role
Interact with others	1.6	• Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective group interaction
Get the work done	1.4, 1.5, 2.1-2.5, 3.2	• Understands key principles and concepts underpinning design and operation of digital systems and tools, and applies these as required including troubleshooting common network problems according to helpdesk procedures • Takes responsibility for planning and organising own workload, identifying ways of sequencing and combining elements for greater efficiency • Implements actions according to a predetermined plan, making adjustments if necessary • Makes decisions quickly and intuitively in familiar situations requiring immediate attention, drawing on past experience to identify key variables and determine the best course of action • Recognises and anticipates an increasing range of unexpected problems, their symptoms and causes on the basis of safety and specified work outcomes

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**

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Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN421 Apply advanced routing protocols to network design	ICTTEN4212A Apply advanced routing protocols to network design	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN421 Apply advanced routing protocols to network design

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- plan network routing requirements to meet design specification
- configure advanced protocols on network routers
- manage network addressing
- troubleshoot network
- install network security.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain distance vector routing protocols RIP v1 and v2
- outline dynamic routing
- summarise enterprise work health and safety (WHS) procedures
- outline hybrid routing protocols enhanced interior gateway routing protocol (EIGRP)
- explain link-state routing protocols open shortest path first (OSPF)
- explain routing and packet forwarding
- describe routing tables
- summarise scalable routing strategies variable length subnet masking (VSLM) and classless inter-domain routing (CIDR)
- outline security protocols using access lists
- clarify static routing
- explain the use of software tools and equipment.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- a network facility and workstations
- tools, equipment and materials currently used in industry
- relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN422 Configure and troubleshoot advanced network switching

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to perform network switch configuration and troubleshooting. This unit applies to large networks involving wireless local area networks (WLANs), virtual local area networks (VLANs), interVLAN routing, remote access management and operating system management of network devices.

It applies to individuals who work cooperatively with others, interpret technical information accurately, and work proficiently with information communication technology (ICT). Installers of internet protocol (IP), enterprise network technicians, network administrators and network support personnel complete this type of work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to work on switched network	1.1 Prepare for given work according to work health and safety (WHS) and environmental requirements with appropriate personnel 1.2 Identify safety hazards and implement risk control measures in

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ELEMENT	PERFORMANCE CRITERIA
	consultation with appropriate personnel 1.3 Determine nature and scope of network and network topology from job briefs or appropriate personnel 1.4 Select and obtain wireless and wired network components requirements according to enterprise procedures 1.5 Obtain operating instructions, manuals, hardware and software testing methodologies 1.6 Consult appropriate personnel to ensure task is coordinated effectively with others involved at the worksite
2. Configure network switches	2.1 Set up and configure network switches according to manufacturer's specifications and enterprise procedures 2.2 Build and configure a routed network using remote access management 2.3 Establish multiple VLANs across the network to manage access and traffic across the network
3. Troubleshoot network	3.1 Monitor network traffic and assess performance against manufacturer's specifications and established procedures 3.2 Troubleshoot network according to manufacturer's specifications and enterprise procedures 3.3 Identify and rectify faults according to enterprise procedures
4. Complete and document network installation and configuration	4.1 Restore worksite to safe condition according to established safety procedures 4.2 Record and store essential configuration information according to enterprise procedures 4.3 Notify appropriate personnel of completion of the task according to enterprise procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.3, 1.4, 2.1,	• Recognises and interprets enterprise procedures, manuals and specifications to determine job

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	3.2, 3.3, 4.2, 4.3	requirements
Writing	4.2, 4.3	• Uses clear, specific and industry-related terminology to develop network documentation and maintain network records • Writes concisely when communicating with relevant personnel
Oral Communication	1.2, 1.3, 4.3	• Liaises and negotiates with customers and peers to achieve outcomes • Uses listening and questioning skills to confirm understanding of requirements
Numeracy	2.2, 2.3, 3.1-3.3	• Interprets technical data and performs calculations to verify information
Navigate the world of work	1.1, 1.2, 2.1, 3.1-3.3, 4.1-4.3	• Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work, and draws attention to any issues that may affect self or others • Recognises and follows organisational procedures and protocols and meets expectations associated with own role
Interact with others	1.6	• Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective group interaction • Selects and uses appropriate conventions and protocols when communicating with co-workers in a range of work contexts
Get the work done	1.4, 1.5, 2.1-2.3, 3.1-3.3	• Understands key principles and concepts underpinning design and operation of digital systems and tools, and applies these as required including troubleshooting network malfunctions • Takes responsibility for planning and organising own workload, identifying ways of sequencing and combining elements for greater efficiency • Implements actions according to a predetermined plan, making adjustments if necessary • Makes decisions quickly and intuitively in familiar situations requiring immediate attention, drawing on past experience to identify key variables and determine the best course of action • Recognises and anticipates an increasing range of unexpected problems, their symptoms and causes, on the basis of safety and specified work outcomes

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Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN422 Configure and troubleshoot advanced network switching	ICTTEN4213A Configure and troubleshoot advanced network switching	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN422 Configure and troubleshoot advanced network switching

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- build and configure a routed network
- configure a virtual local area networks (VLAN) on a given network topology
- configure VLAN trunking and spanning tree protocols
- establish VLANs over a wireless network
- design and deploy remote access and network security.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline enterprise work health and safety (WHS) procedures
- explain interVLAN routing
- describe spanning tree protocol
- clarify switch and remote network security management
- describe the tool and equipment required, and their correct usage
- outline troubleshooting procedures
- summarise VLAN trunking protocol
- explain wireless local area network (LAN) set-up and access configuration.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

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- a site where configuring advanced network switching may be conducted
- tools, equipment and materials currently used in industry
- relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN423 Install and maintain a wide area network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to use appropriate tools, equipment, software and protocols to connect and support a wide area network (WAN).

It applies to individuals who work cooperatively with others, interpret technical information accurately and work proficiently with information communication technology (ICT). Installers of internet protocol (IP) networks, IP network technicians, network administrators and network support personnel complete this type of work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for installation and maintenance of network with WAN access	1.1 Prepare for given work according to work health and safety (WHS) and environmental requirements with appropriate personnel 1.2 Identify safety hazards and implement risk control measures in consultation with appropriate personnel 1.3 Determine network nature and scope from job briefs or appropriate personnel

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Select and obtain network hardware, software, WAN protocol and technology requirements according to enterprise procedures 1.5 Obtain operating instructions, manuals, installation procedures, hardware and software testing methodologies and testing resources 1.6 Consult appropriate personnel to ensure task is coordinated effectively with others involved at the worksite
2. Install and maintain WAN accessible network	2.1 Determine network addressing scheme for network connectivity, and confirm using calculations 2.2 Identify security threats and initiate control measures according to enterprise procedures 2.3 Set up and configure network to provide WAN access according to manufacturer's specifications and enterprise procedures 2.4 Use hardware and software analysis and diagnostic methodologies to test network connectivity
3. Complete and document WAN network installation	3.1 Restore worksite to safe condition according to established safety procedures 3.2 Record and store essential installation information according to enterprise procedures 3.3 Notify appropriate personnel of completion of the task according to enterprise procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.3, 1.4, 2.2, 2.3, 3.2, 3.3	• Recognises and interprets enterprise procedures, manuals and specifications to determine job requirements
Writing	1.2, 3.2, 3.3	• Uses clear, specific and industry-related terminology to develop network documentation and maintain network records • Writes concisely when communicating with relevant personnel

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Oral Communication	1.2, 1.3, 1.6, 3.3	• Liaises and negotiates with others to achieve outcomes • Uses listening and questioning skills to confirm understanding for requirements
Numeracy	2.1	• Interprets technical data and performs calculations to verify information
Navigate the world of work	1.1, 1.2, 1.4, 2.2, 2.3, 3.1-3.3	• Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work, and draws attention to any issues that may affect self or others • Recognises and follows organisational procedures and protocols and meets expectations associated with own role
Interact with others	1.6	• Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective group interaction
Get the work done	1.4, 1.5, 2.1-2.4, 3.2, 3.3	• Understands key principles and concepts underpinning design and operation of digital systems and tools, and applies these as required including using industry-standard troubleshooting • Takes responsibility for planning and organising own workload, identifying ways of sequencing and combining elements for greater efficiency • Implements actions according to a predetermined plan, making adjustments if necessary • Makes decisions quickly and intuitively in familiar situations requiring immediate attention, drawing on past experience to identify key variables and determine the best course of action • Recognises and anticipates an increasing range of unexpected problems, their symptoms and causes, on the basis of safety and specified work outcomes

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN423 Install and maintain a wide area	ICTTEN4214A Install and maintain a wide area network	Updated to meet Standards for Training	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
network		Packages.	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN423 Install and maintain a wide area network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- plan installation of a wide area network (WAN) accessible network
- select and apply WAN link protocols
- configure internet protocol (IP) addressing across WAN
- troubleshoot WAN communication issues
- install WAN access security measures.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline enterprise work health and safety (WHS) procedures
- explain IP addressing services and network scaling
- summarise methods of securing network services including access control lists
- explain Open Systems Interconnection (OSI) layered communication model
- outline requirements to provide teleworker network services
- describe correct usage of relevant tools and equipment
- outline WAN link protocols including:
  - frame relay
  - high-level data link control (HDLC)
  - link access procedure, balanced (LAPB)
  - point-to-point protocol (PPP)
- summarise WAN troubleshooting methodologies and analysis and diagnostic tools.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- a site where installation and maintenance of a WAN may be conducted
- tools, equipment and materials currently used in industry
- relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN424 Install and configure internet protocol TV in a service provider network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to design and connect a multi-protocol label switching (MPLS) network for internet protocol TV (IPTV). This includes secure core and access networks for the service provider.

It applies to individuals who interpret technical information accurately and work proficiently with information communication technology (ICT). Technical staff installing an internet protocol (IP) service provider network for delivery of emerging technologies for IPTV using multicast (broadcast) and unicast video on demand (VoD) streaming complete this work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to implement IPTV service provider	1.1 Obtain and clarify work health and safety (WHS) requirements and risk control measures and procedures for a given work area with appropriate personnel 1.2 Use topology of an IPTV network and design plans to locate

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ELEMENT	PERFORMANCE CRITERIA
	network elements for video over broadband 1.3 Select network elements to provide optimum video delivery service 1.4 Obtain configuration instructions for network elements
2. Implement IPTV network to meet business requirements	2.1 Configure an IP-MPLS core network overlaying the IP network to deliver IPTV 2.2 Implement VoD application to meet bandwidth requirements and quality of service (QoS) requirements for commercial viability of IPTV network 2.3 Install and configure video service routers for content delivery system (CDS) applications to support TV streaming and internet streaming, with session shifting for follow-me or mobile video facility 2.4 Produce addressing scheme and protocols required for IP multicasting used in the IPTV network 2.5 Configure security measures in IPTV network to protect against security threats 2.6 Configure label switch routers (LSR) to provide secure methods of transporting IP packets using layer 2 protocols in an MPLS network 2.7 Configure MPLS-TE (traffic engineering) to provide routing on diverse paths to avoid congestion and guarantee bandwidth services 2.8 Troubleshoot network according to manufacturer's specifications and enterprise procedures
3. Build and configure CDN architecture network	3.1 Build content delivery network (CDN) architecture overlaying routing and switching architecture of an IP network to deliver internet TV to internet devices 3.2 Use routing and switching infrastructure to enable CDN share characteristics of each element to produce network functionality 3.3 Install and configure web cache communication protocol (WCCP) on router to redirect traffic flows in real-time to reduce transmission costs and download times
4. Complete and document network installation	4.1 Restore worksite to safe condition according to established safety procedures 4.2 Record and store essential installation information according to enterprise procedures 4.3 Notify appropriate personnel of completion of the task according

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ELEMENT	PERFORMANCE CRITERIA
	to enterprise procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 2.8, 4.2, 4.3	• Recognises and interprets enterprise procedures, manuals and technical specifications to determine job requirements
Writing	4.2, 4.3	• Uses clear, specific and industry-related terminology to develop network documentation and maintain network records • Writes concisely when communicating with relevant personnel
Oral Communication	1.1, 4.3	• Liaises closely with personnel to determine specific installation and safety requirements • Uses listening and questioning skills to confirm understanding for requirements
Numeracy	2.4, 3.3	• Interprets technical data to produce IP addressing schemes and determine cost efficiencies
Navigate the world of work	1.1, 2.8, 4.1-4.3	• Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work, and draws attention to any issues that may affect self or others • Recognises and follows organisational procedures and protocols and meets expectations associated with own role
Get the work done	1.2-1.4, 2.1, 3.1-3.3, 2.2-2.8	• Understands key principles and concepts underpinning design and operation of digital systems and tools, and applies these as required including using industry-standard troubleshooting • Takes responsibility for planning and organising own workload, identifying benchmarks and scope for projects

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Unit Mapping Information

Code and title **current version**	**Code and title** **previous version**	**Comments**	**Equivalence status**
ICTTEN424 Install and configure internet protocol TV in a service provider network	ICTTEN4215A Install and configure internet protocol TV in a service provider network	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN424 Install and configure internet protocol TV in a service provider network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- install relevant network hardware and software
- configure and test internet protocol television (IPTV) network according to specified guidelines
- configure label switch routers (LSR) in an multi-protocol label switching (MPLS) network
- build and configure content delivery network (CDN) architecture network
- implement secure network.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain competing video delivery over broadband networks
- summarise current industry-accepted hardware and software products
- outline networking technologies incorporating detailed knowledge of network operating systems and IP networks
- describe transmission technologies and protocols including:
  - border gateway protocol (BGP)
  - enhanced interior gateway routing protocol (EIGRP)
  - flash
  - hypertext transfer protocol (HTTP)
  - internet group management protocol (IGMP)
  - open shortest path first (OSPF)
  - real time streaming protocol (RTSP)
  - routing information protocol (RIP)

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- web cache communication protocol (WCCP) operations.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- a site where installation and configuration of an IPTV network may be conducted
- equipment currently used in industry
- information on different protocols
- relevant technical information, legislative requirements and other site and project-related documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN425 Design, install and configure a customer smart technology network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to test and troubleshoot smart technology network installations.

It applies to individuals who design and install smart grid networks for domestic or industrial enterprises using internet protocol (IP) networking technology.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for design and installation of a smart technology network	1.1 Prepare for given work according to work health and safety (WHS) and environmental requirements with appropriate personnel from the enterprise 1.2 Identify safety hazards and implement risk control measures in consultation with appropriate personnel 1.3 Determine nature and scope of the smart technology network from customer specifications and appropriate personnel

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Obtain operating instructions, manuals, hardware and software testing methodologies 1.5 Consult appropriate personnel to ensure task is coordinated effectively with others involved at the worksite
2. Design a customer smart technology network	2.1 Produce a smart technology network topology that is interoperable and scalable after considering customer requirements, technical specifications, physical and financial constraints and expansion projections 2.2 Determine network devices and network resources according to enterprise procedures 2.3 Produce smart technology network design including network security and network element configurations to meet design specifications and enterprise procedures
3. Install and configure a designed smart technology network	3.1 Install smart technology network hardware to topology design plan according to enterprise procedures 3.2 Determine network addressing scheme for network connectivity, and verify using calculations 3.3 Configure network elements to perform logical connection of smart technology network topology with required network security features 3.4 Conduct connectivity and performance tests to verify the network installation meets design specification 3.5 Troubleshoot smart technology network and internet connectivity according to manufacturer's specifications and enterprise procedures
4. Complete and document network design and installation	4.1 Restore worksite to safe condition according to established safety procedures 4.2 Record and store essential design and installation information according to enterprise procedures 4.3 Notify appropriate personnel of task completion according to enterprise procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

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Skill	**Performance Criteria**	**Description**
Reading	1.3, 2.1, 2.3, 3.5, 4.2, 4.3	• Recognises and interprets enterprise procedures, manuals and specifications to determine important information
Writing	2.3, 4.2, 4.3	• Uses clear, specific and industry-related terminology to develop network documentation and update workplace records and in written communications with customers
Oral Communication	1.1-1.3, 1.5, 4.3	• Liaises with appropriate personnel about technical requirements using specific and relevant language • Uses listening and questioning techniques to confirm understanding
Numeracy	2.1, 3.2	• Evaluates and reviews technical data and makes calculations to verify connectivity and configuration
Navigate the world of work	1.1, 1.2, 2.2, 2.3, 3.1, 3.5, 4.1-4.3	• Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work, and draws attention to any issues that may affect self or others • Recognises and follows organisational protocols and meets expectations associated with own role
Interact with others	1.1-1.3,1.5	• Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective group interaction • Selects and uses appropriate conventions and protocols when communicating with customers and co-workers in a range of work contexts
Get the work done	1.3, 1.4, 2.1, 2.2, 3.1-3.5, 4.2	• Determines job priorities and works logically and systematically to undertake clearly defined and familiar tasks • Implements actions according to a predetermined plan, making slight adjustments if necessary, and addressing some unexpected issues • Takes responsibility for routine decision-making by selecting from a range of predetermined options in routine situations, identifying and taking some situational factors into account • Diagnoses and implements standard solutions to unexpected situations based on safety requirements and specified work outcomes • Understands purposes and specific functions of common digital systems and uses them effectively to complete routine tasks

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Unit Mapping Information

Code and title **current version**	**Code and title** **previous version**	**Comments**	**Equivalence status**
ICTTEN425 Design, install and configure a customer smart technology network	ICTTEN4229B Design, install and configure a customer smart technology network	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN425 Design, install and configure a customer smart technology network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- determine job requirements by referring to documentation and through discussion with appropriate people
- design a smart technology network that uses advanced networking techniques
- install a smart technology network according to design specification
- configure network devices to meet design functionality
- document smart technology network design, installation and configuration.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline enterprise work health and safety (WHS) procedures
- summarise network design concepts including:
  - business requirements
  - network topologies
  - physical and financial constraints
  - security
  - wired or wireless options
- explain network requirements:
  - applications
  - lifecycle
  - manageability
  - quality of service

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- summarise open systems interconnect (OSI) layered communication model
- summarise the following areas of troubleshooting including:
  - impact of network failure
  - maintenance troubleshooting
  - different problem-solving methodologies.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- a site where design and installation of a smart technology network may be conducted
- tools, equipment and materials currently used in industry
- relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN426 Design network projects

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to plan, design, construct and manage access, building or core telecommunications networks.

It applies to individuals working as technical officers, communications workers or engineers, from private and public organisations who plan, design and manage access, building and core network technologies for a service provider.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Analyse different types of network technologies	1.1 Review available network technologies and compare them for application to the expansion or augmentation of network services 1.2 Examine various techniques for access networks to provide service to green fields, brown fields and rehabilitation projects 1.3 Examine various techniques for building and core networks to provide for new service, capacity expansion and equipment recovery projects

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Determine the type of network by accessing and using network information sources 1.5 Produce a brief on how network architecture components relate to the larger network and their impact on the work 1.6 Develop an installation activity schedule to minimise workplace disruption and according to relevant regulation and standards 1.7 Evaluate equipment type and technologies to be considered to determine availability and compatibility with existing network equipment
2. Apply deployment and construction practices for network technologies	2.1 Review conduit and jointing chamber standards and practices for the access network 2.2 Examine standards, practices and requirements for locating telecommunications infrastructure in the access network 2.3 Examine standards, practices and requirements for locating and standing racks and cabinets and supporting infrastructure 2.4 Examine capacity and practices for cabling and patching of twisted pair, coax and fibre distribution frames
3. Review network standards and prepare draft design	3.1 Review client's network deployment rules and apply to a network design 3.2 Produce preliminary plan or design on deployment of the network that maintains integrity of access, building or core networks 3.3 Establishing a solution for unforeseen problems through discussions with appropriate personnel, with consideration to job specifications, safety and enterprise procedures to establish a solution 3.4 Review plan to ensure it complies with all applicable standards and codes required when working on network, and where appropriate make adjustments 3.5 Produce final design including recommendations agreed with customer

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description

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Reading	1.4, 1.6, 3.3	• Recognises and interprets technical and non-technical documentation to incorporate important information in designs
Writing	1.5, 1.6, 3.1, 3.2, 3.4, 3.5	• Uses clear, specific and industry-related terminology to document technical requirements and procedures
Oral Communication	3.3	• Liaises with appropriate personnel about technical and operational requirements using specific and relevant language • Uses listening and questioning techniques to confirm understanding
Navigate the world of work	2.1-2.4, 3.1, 3.3, 3.4	• Takes personal responsibility for adherence to legal and regulatory responsibilities and practices relevant to own work • Recognises and follows organisational procedures protocols and meets expectations associated with own role
Interacts with others	3.3	• Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective group interaction
Get the work done	1.1-1.3, 1.7, 3.3	• Determines job priorities and works logically and systematically to undertake clearly defined and familiar tasks • Implements actions according to a predetermined plan, making slight adjustments if necessary and addressing some unexpected issues • Takes responsibility for routine decision-making by selecting from a range of predetermined options in routine situations, identifying and taking some situational factors into account • Diagnoses and implements standard solutions to unexpected situations based on safety requirements and specified work outcomes • Reflects on ways digital systems and tools are used to achieve work goals, and recognises strategic and operational applications

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**

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Code and title current version	Code and title previous version	Comments	Equivalence status
ICTTEN426 Design network projects	ICTTEN4241A Design network projects	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN426 Design network projects

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- identify the most suitable network technology to be deployed for a given requirement
- apply established planning, design or management techniques for project deployment
- produce a design, which is compliant to the techniques, rules and standards of the deployed network.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline the following features of a telecommunications network:
  - architecture and geographical categorisations
  - information sources
  - technology and equipment
  - capacity and capability management
  - capacity limitation of various platforms
  - commercial considerations of access network deployment
  - compatibility issues of technology and equipment
  - currency of technology and equipment use
  - enterprise deployment rules and rational
  - exemption process criteria
  - major equipment components of a modern access architecture
  - monitoring techniques to manage the access network
  - network topologies

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  - product capability and availability allowable within an access network
  - telecommunications access networks issues and challenges
  - telecommunications legislation, acts and regulations
- identify and describe key features of common telecommunications networks.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- network planning, design and other site-related documentation
- equipment specifications
- live network of training facilities with simulated network organisational guidelines
- relevant standards and practices documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN427 Conduct site surveys to identify carrier installation requirements

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to implement design processes, develop solutions, and merge technological development and product implementation in access, building and core networks.

It applies to individuals working as technical staff on projects within a carrier network for carrier, commercial or industrial installations.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Obtain access to work site	1.1 Notify appropriate personnel, if necessary, to arrange site access, discuss installation requirements and identify carrier network systems 1.2 Assess site-specific safety requirements and enterprise work health and safety (WHS) processes and procedures 1.3 Use network information systems to obtain planning data

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ELEMENT	PERFORMANCE CRITERIA
2. Identify existing infrastructure	2.1 Confirm details of installation with stakeholders 2.2 Verify site conditions and building construction 2.3 Locate and record existing facilities and systems 2.4 Confirm installation locations and identify barriers to planned network extension 2.5 Integrate existing network and floor plans into documentation where available
3. Integrate existing infrastructure into design brief	3.1 Review existing plans, drawings and databases against the design brief 3.2 Calculate capacity of existing facilities against proposed usage to ensure appropriate design decisions for new installation 3.3 Incorporate all data into new installation design 3.4 Mark up plans and prepare report on new installation design 3.5 Develop contingency plans for anticipated constraints
4. Review design for compliance with standards and legislation	4.1 Examine standards, practices and requirements for locating telecommunications infrastructure in the access network 4.2 Review installation design to ensure compliance with requirements of federal, state and local regulations, relevant legislation, codes and standards 4.3 Initiate any special studies or investigations necessary for completion of the project
5. Complete required reports and documentation	5.1 Complete required documents promptly and according to planning parameters 5.2 Obtain carrier confirmation from documented requirements 5.3 Distribute design documentation to stakeholders promptly 5.4 Obtain project plan sign-off from carrier

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description

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Reading	1.3, 2.2-2.5, 3.1, 3.5, 4.2, 5.2	• Recognises and interprets a wide variety of technical and non-technical documentation
Writing	1.1, 2.1, 2.3, 3.3, 3.4, 4.1, 4.3, 5.1, 5.2, 5.4	• Uses clear, specific and industry-related terminology to document technical requirements and procedures
Oral Communication	1.3, 2.1, 2.4, 4.3, 5.2	• Participates in verbal exchanges with customers and team members about technical and operational requirements using specific and relevant language • Uses listening and questioning techniques to confirm understanding
Numeracy	3.2	• Analyses numerical information to interpret site-specific data
Navigate the world of work	1.2, 4.1, 4.2, 5.1	• Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work
Interact with others	2.1, 4.3, 5.2, 5.4	• Selects and uses appropriate conventions and protocols when communicating with customers and co-workers in a range of work contexts
Get the work done	1.1-1.3, 2.2-2.5, 3.3, 3.5, 4.3, 5.2-5.4	• Determines job priorities and works logically and systematically to undertake clearly defined and familiar tasks and plan necessary resources • Implements actions according to a predetermined plan, making slight adjustments if necessary and addressing some unexpected issues • Takes responsibility for routine decision-making by selecting from a range of predetermined options in routine situations, identifying and taking some situational factors into account • Diagnoses and implements standard solutions to unexpected situations based on safety requirements and specified work outcomes • Recognises and initiates approaches to enhance work practices, taking present and future needs and barriers to plan completion into account • Reflects on ways digital systems and tools are used to achieve work goals, and recognises strategic and operational applications

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Unit Mapping Information

Code and title **current version**	**Code and title** **previous version**	**Comments**	**Equivalence status**
ICTTEN427 Conduct site surveys to identify carrier installation requirements	ICTTEN4242A Conduct site surveys to identify carrier installation requirements	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN427 Conduct site surveys to identify carrier installation requirements

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- evaluate existing infrastructure on an installation site
- integrate existing infrastructure into an installation design
- develop design specifications for an installation project
- engage stakeholders and carriers in design approval process.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify and explain the impact of relevant legislation, codes of practice and other formal agreements that impact communications work
- describe access networks in Australia and state how it influences development of projects
- identify costs associated with carrier installations and determine estimates and operating budgets for an installation
- identify network performance information required to produce a network design
- specify current, new and emerging technologies to be considered for a communications design, including barriers that may have an impact
- define project management and its purpose and explain associated databases and project management software programs used
- explain economic and political influences and trends that impact communications installations for public and commercial enterprises
- describe a network plan and its components
- explain the purpose of having authorities and delegations required when costing and estimating financials for projects

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- explain the impact of local and international economic conditions on telecommunications installations and infrastructure, and typical challenges and limits facing technology today and on future needs
- describe the process and documentation required to collate and write project briefs, reports and project charters
- identify specific work health and safety requirements relating to site conditions and activities, including manufacturer's requirements for safe operation of equipment to be incorporated into project documentation.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- a network planning area, systems and deployment rules and standards
- relevant databases, licensing requirements and other site related procedures
- a location and scenario suitable to conduct a site survey.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN429 Estimate and quote for carrier telecommunications equipment installations

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to prepare detailed estimates and quotes, including updating schematic drawings and specifications for carrier telecommunications equipment installations.

It applies to technical staff who provide estimates and quotes to clients for indoor and outdoor installation within a carrier network for commercial or industrial communications installations.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Confirm and update schematic drawings and specifications	1.1 Review existing specifications and drawings for completeness 1.2 Prepare additional drawings and specifications for installation if required 1.3 Compare drawings with design brief to confirm requirements

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Confirm all cable and locations with carrier
2. Price labour, materials and other relevant items and establish availability	2.1 Obtain quotations and delivery dates from suppliers 2.2 Use schedule of rates for scheduled items 2.3 Obtain quotes and supply dates for all non-scheduled items or activities 2.4 Estimate labour costs based on company practices 2.5 Check pricing documentation to ensure supply proposal matches carrier specification for material, quality and performance
3. Estimate labour, materials and other relevant item requirements	3.1 Prepare estimations allowing for contingencies during installation and relevant legislation, codes, regulations and standards 3.2 Ensure estimates will return a profit on installation where appropriate
4. Prepare and confirm quote with carrier	4.1 Prepare a project installation quote that meets carrier requirements 4.2 Negotiate changes and variations to meet carrier and company needs
5. Establish carrier’s financial arrangements	5.1 Obtain carrier's approval for project design drawings and estimate 5.2 Issue design drawings and specifications for authority to construct

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 2.1-2.5	• Analyses and consolidates information and data from a range of sources, against defined criteria and requirements, and checks for accuracy and completeness
Writing	1.2, 1.3, 2.1, 3.1, 3.2, 4.1, 5.1, 5.2	• Documents outcomes and changes to plans using industry-relevant terminology and recognised plan symbols • Accurately records and completes organisational plans, specifications and correspondence using clear language and correct spelling, grammar and industry

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		terminology
Oral Communication	1.4, 2.1, 4.2, 5.1	• Uses collaborative and inclusive techniques including active listening and questioning and reading of verbal and non-verbal signals to convey and clarify information and confirm understanding • Presents complex information in formal situations using clear and convincing language, tone and pace appropriate for the audience and purpose
Numeracy	2.1-2.5, 3.1, 3.2	• Applies financial modelling skills to identify, analyse and evaluate budgetary information, time durations and human resource allocations • Performs mathematical calculations to analyse labour, costs and quantities to accurately process quotations
Navigate the world of work	2.4, 3.1, 4.1	• Ensures knowledge of legislative requirements and products is kept up-to-date to provide accurate information • Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements
Interact with others	1.4, 4.2, 5.1, 5.2	• Selects and uses appropriate conventions and protocols when communicating with clients and co-workers in a range of work contexts • Uses a range of strategies to establish a sense of connection and build rapport with clients and co-workers
Get the work done	1.1-1.4, 2.1-2.5, 3.1, 5.2	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes • Makes decisions and implements standard procedures for routine tasks, using formal decision-making processes for more complex and non-routine situations • Addresses less predictable problems and initiates standard procedures in response, applying problem-solving processes in determining a solution • Uses familiar digital technologies and systems to access information, enter data, present information and communicate with others, cognisant of data security and safety

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTTEN429 Estimate and quote for carrier telecommunications equipment installations	ICTTEN4244A Estimate and quote for carrier telecommunications equipment installations	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN429 Estimate and quote for carrier telecommunications equipment installations

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- prepare detailed estimates
- update schematic drawings and specifications for telecommunications equipment installations including:
  - materials
  - labour costs
- negotiate material availability and pricing for carrier equipment and network installations with contractors
- document detailed quotes for installations that allow for changes and variations
- prepare and confirm quote and financial arrangements with carrier.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- compare and contrast features of carrier telecommunications equipment
- identify and summarise application of legislation, codes of practice and other formal agreements that impact the work activity
- analyse and document the manufacturer's requirements for safe operation of equipment
- describe processes and techniques required to prepare plans, estimate and quote for installations
- identify and apply specific work health and safety (WHS) requirements relating to design and site conditions
- identify and remedy typical issues and challenges of dealing with carriers
- explore allocations to be included in the design specifications and quotation

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- determine common contingencies to consider in a specification or quotation.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- special purpose tools, equipment and materials
- sites on which estimates and quotes may be conducted
- relevant databases and licensing requirements
- site-related documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN430 Design infrastructure for telecommunications network installations

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to design supporting infrastructure for telecommunications network installations; for carrier grade switching, transmission and access equipment and associated media, power and monitoring equipment and alarm systems, fibre distribution hubs (FDHs), and remote power feeds.

It applies to field officers, design technicians or technical supervisors from carriers, contractors or other service providers working with switching, transmission and radio networks and the various transmission paths including cable, optical fibre, radio, microwave and satellite.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for design of infrastructure work	1.1 Obtain relevant legislation, codes, regulations and standards for compliance when conducting work

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ELEMENT	PERFORMANCE CRITERIA
	1.2 Notify client to arrange site access and obtain plans and specifications 1.3 Conduct a site survey to verify infrastructure design requirements can be met 1.4 Identify site hazards and notify appropriate personnel to make site safe 1.5 Develop a design activity schedule to minimise workplace disruption and according to relevant regulation and standards 1.6 Discuss material supplies, safety equipment, resources, tools and test equipment with the construction group so they are available when required for installation for safe work practice
2. Design network equipment infrastructure	2.1 Prepare infrastructure designs according to electrical safety and work health and safety (WHS) and environmental requirements after consultation with operational staff 2.2 Design metal superstructure to house equipment according to manufacturer's specifications 2.3 Design cable pathways, including cable distribution frames and support materials, according to specifications
3. Design power infrastructure	3.1 Design power supply and earthing according to specifications and standard electrical practices 3.2 Design battery and rectifier equipment for project according to manufacturer's and WHS requirements 3.3 Design high Ohmeric distribution (HOD) and associated power distribution systems
4. Design DC power distribution	4.1 Design power distribution work to meet electrical safety requirements and certifications 4.2 Monitor electrical work to ensure compliance with installation plan 4.3 Identify and rectify faults where possible or escalate according to enterprise policy
5. Restore site and complete documentation	5.1 Attach infrastructure labels and designations according to enterprise requirements 5.2 Complete inspection sheets and declare asset ready for next stage of installation using appropriate sign off documentation 5.3 Clean up and prepare site in readiness for next installation phase 5.4 Notify carrier and obtain sign-off

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.3	• Analyses and consolidates information and data from a range of sources, against defined criteria and requirements, and checks for accuracy and completeness
Writing	1.2, 1.4, 2.1-2.3, 3.1-3.3, 4.1, 5.1, 5.2, 5.4	• Prepares and produces diagrammatic models and associated documents that convey design parameters • Develops procedural material for a specific audience using clear and detailed language to convey explicit information, requirements and recommendations
Oral Communication	1.2, 1.4, 1.6, 5.4	• Uses collaborative and inclusive techniques including active listening and questioning and reading of verbal and non-verbal signals to convey and clarify information and confirm understanding
Numeracy	1.5, 2.2-2.4, 3.1-3.3, 4.1	• Applies design modelling skills to identify, analyse and evaluate budgetary information, time durations and human resource allocations • Performs mathematical calculations to analyse and design telecommunications architecture, labour, costs and material quantities
Navigate the world of work	1.4-1.6, 2.1-2.3, 3.1-3.3, 4.1-4.3, 5.1, 5.2	• Accepts responsibility and ownership for the task and makes decisions on completion parameters and the need of coordination with others • Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements • Identifies and acts on issues that contravene relevant policies, procedures and legal requirements
Interact with others	1.2, 1.6, 5.4	• Selects and uses appropriate conventions and protocols when communicating with clients and co-workers in a range of work contexts • Uses a range of strategies to establish a sense of connection and build rapport with clients and co-workers
Get the work	1.1, 1.3-1.5, 2.1-2.7, 3.1, 3.2, 4.1-4.3, 5.1,	• Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects

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done	5.3, 5.4	with others, taking into account capabilities, efficiencies and effectiveness • Monitors progress of plans and schedules and reviews and changes them to meet new demands and priorities • Makes routine decisions and implements standard procedures for routine tasks, using formal decision-making processes for more complex and non-routine situations • Addresses less predictable problems and initiates standard procedures in response, applying problem-solving processes in determining a solution

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN430 Design infrastructure for telecommunications network installations	ICTTEN4245A Design infrastructure for telecommunications network installations	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN430 Design infrastructure for telecommunications network installations

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- determine potential earthing locations, cable routes, cables trays, data cabinets, telecommunication enclosures, distributors
- design metal superstructure
- design protective earth and functional earth installations
- design power infrastructure
- design, monitor and rectify faults in DC power distribution
- design locations and facilities for access network infrastructure.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- evaluate capabilities and performance of cabling types, connectors and cabling structures for given design parameters
- explore common carrier telecommunications applications and related equipment and infrastructure suited to a design
- determine the most appropriate connections to carrier infrastructure or equipment
- identify and recognise compliance requirements of current legislation relating to installation of telecommunications equipment and connection to carrier services
- evaluate environmental impacts including options for green information and communications technology (ICT) installations for network topologies, interfaces and interconnect solutions
- define work health and safety (WHS) requirements for the design to ensure a safe installation plan including:
  - confined spaces

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  - electrical safety
  - working at heights
  - manual handling and lifting
  - materials handling
  - physical hazards
- evaluate and summarise network and transmission supplies and equipment required for a design
- determine power requirements and electrical safety for a specific design
- specify warranty information for equipment supplies and contractor work guarantees
- devise an appropriate survey to determine design criteria for a given site
- explore and evaluate the nature of tools and equipment required for installation of the design
- consider power distribution work requirements and the impact on the design.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- special purpose tools, equipment and materials
- site where installation of supporting infrastructure may be conducted
- plant, tools and equipment currently used in industry
- relevant regulatory and equipment documentation that impact work activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN431 Design a dense wavelength division multiplexing system

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the performance outcomes, skills and knowledge required to design a dense wavelength division multiplexing (DWDM) system in optical networks.

It applies to telecommunications technical staff who design systems for installation of long haul or metropolitan area DWDM equipment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Obtain access to worksite safely and with authority from site owner	1.1 Obtain and review DWDM installation brief 1.2 Determine site access requirements 1.3 Notify parties if necessary to arrange site access and discuss DWDM installation requirements 1.4 Assess site-specific safety requirements and enterprise work health and safety (WHS) processes and procedures

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ELEMENT	PERFORMANCE CRITERIA
2. Prepare to install design DWDM units	2.1 Survey location for DWDM installation and scope installation parameters 2.2 Identify suitable location for DWDM equipment racks 2.3 Determine number and location of shelves and cards in racks 2.4 Determine capacity of optical distribution frames (ODFs), patching and network management system (NMS) connections for the installation 2.5 Determine power feed options
3. Design DWDM units and associated cabling	3.1 Design DWDM racks, including locations and layout 3.2 Examine standards, practices and requirements for designing DWDM systems 3.3 Design DWDM shelf and card positions from customer and manufacturer documents 3.4 Design supporting patch panel and jumpering schemes 3.5 Include appropriate ancillary equipment and connections in design specifications 3.6 Prepare detailed design drawings for racks, shelves and cards from manufacturer and carrier documents 3.7 Prepare detailed design drawings for patching, jumpering and power feeds from manufacturer and carrier documents
4. Review design for compliance with standards and legislation	4.1 Confirm DWDM installation design meets the brief 4.2 Review installation design to ensure compliance with requirements of federal, state and local regulations, relevant legislation, codes and standards

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.4, 3.2, 3.3, 3.6, 3.7, 4.1, 4.2	• Critically analyses complex documentation from a variety of sources and consolidates information relating to specific criteria to determine design

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		requirements
Writing	1.3, 3.1, 3.3-3.7	• Prepares and produces dynamic material for a specific audience using clear and detailed language to convey explicit information, requirements and recommendations • Produces plans using industry-relevant terminology and recognised industry symbols
Oral Communication	1.3	• Uses collaborative and inclusive techniques, including active listening and questioning and reading of verbal and non-verbal signals, to convey and clarify information and confirm understanding
Numeracy	2.3-2.5, 3.1, 3.3, 3.4	• Uses highly-developed numeracy skills to interpret complex information, perform calculations and record outcomes for designs
Navigate the world of work	1.4, 3.2, 4.2	• Works independently or with others to make decisions to achieve organisation outcomes • Takes full responsibility for following policies, procedures and legislative requirements, and identifies organisational implications of new legislation or regulation
Interact with others	1.3, 4.1	• Implements strategies for a diverse range of colleagues and clients to build rapport and foster strong relationships
Get the work done	1.1, 1.2, 1.4, 2.1-2.5, 3.1, 3.3, 3.6, 3.7, 4.1	• Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others taking into account capabilities, efficiencies and effectiveness • Makes critical decisions quickly and intuitively in complex situations, taking into consideration a range of variables • Applies systematic and analytical decision-making processes for complex and non-routine situations • Responds intuitively to problems requiring immediate resolution, drawing on past experiences to focus on the cause of a problem • Uses and investigates new digital technologies and applications to manage and manipulate data and communicate effectively with others, in a secure and stable digital environment

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Unit Mapping Information

Code and title **current version**	**Code and title** **previous version**	**Comments**	**Equivalence status**
ICTTEN431 Design a dense wavelength division multiplexing system	ICTTEN4246A Design a dense wavelength division multiplexing installations	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN431 Design a dense wavelength division multiplexing system

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- design a dense wavelength division multiplexing (DWDM) system and associated cabling according to plans and specifications
- design DWDM power and ground connections
- complete and confirm installation design report.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- recognise principles of operation of a DWDM
- recognise electrostatic discharge and apply work practices to minimise damage to equipment
- recognise and describe the function and types of optical fibre connectors and characteristics of optical fibre
- describe specific work health and safety (WHS) requirements that impact the safe inspection of optical connectors
- recognise and apply principles of safe measurement of optical power for laser transmission systems
- describe tools and ancillary equipment commonly used for DWDM systems
- recognise and describe common power wiring faults.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- special purpose tools, equipment and materials
- a suitable site for DWDM equipment installation
- tools and equipment required for installation
- a range of optical fibres to suit the installation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN501 Provide consultancy and technical support in the customer premises equipment sector

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to provide advice to clients wishing to install or upgrade telecommunications equipment on their premises.

It applies to individuals who help organisations deploy converging technologies integrating data, wireless, optical and internet protocol (IP) networks within a customer premises in domestic, commercial or industrial installations.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan to provide consultancy and technical support in the CPE sector	1.1 Obtain consultancy requirements from client 1.2 Establish relationship with industry experts to maintain currency with latest industry innovations in the customer premises' equipment (CPE) sector 1.3 Access sources of product and technical information relating to change and innovation

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Access and evaluate latest data relating to change and innovation in the CPE sector for company use within an appropriate timeframe
2. Assess customer needs	2.1 Develop knowledge and understanding of the client's business to provide an accurate solution according to requirements 2.2 Investigate communication requirements including networks, based on business needs and demands 2.3 Ascertain client's physical and financial parameters 2.4 Present reports and recommendations within client's timeframes
3. Provide consultancy and expert advice	3.1 Provide timely and accurate expert consultancy and advice to company staff and clients 3.2 Provide communication solutions that meet client's requirements and relevant legislation, codes, regulations and standards 3.3 Provide alternative solutions for clients where their needs cannot be better met in an innovative way 3.4 Provide a report on advice and solutions that match both the physical and financial demands of the client 3.5 Consult with client for an agreed solution
4. Control and manage product and technical information	4.1 Provide all relevant personnel with the latest product and technical information 4.2 Monitor the information flow process to ensure appropriate personnel have access to the latest data 4.3 Provide the client with final consultancy reports and recommendations

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.4, 3.2	• Recognises and interprets technical and regulatory specifications and related documentation to determine job requirements
Writing	3.1, 3.2, 3.4, 3.5	• Prepares specific expert information which conveys clear recommendations and uses terminology

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		appropriate to present to relevant personnel
Oral Communication	3.1, 3.2, 3.5	• Liaises with customers to ensure requirements are properly understood and can be achieved within established timeframes • Uses listening and questioning skills to confirm understanding of requirements
Numeracy	3.4	• Interprets numerical information and applies mathematical calculations for dimensioning, cost and financial considerations
Navigate the world of work	2.1, 3.2	• Develops understanding related to current role using a range of formal and informal opportunities to develop knowledge skills and insight • Keeps up-to-date with relevant legislation and regulations and considers implications of these when providing solutions in the workplace
Interact with others	1.1, 1.2, 2.4, 4.1-4.3	• Considers purpose and possible actions to be taken as a result of any work related communication • Selects and uses communication conventions and protocols to suit purpose and audience • Recognises importance of building rapport to establish effective working relationships
Get the work done	1.3, 1.4, 2.2, 2.3, 3.3	• Understands key principles and concepts underpinning design and operation of digital systems and tools • Takes responsibility for planning and organising site access arrangements and sequencing own workload, identifying ways of combining elements for greater efficiency • Recognises potential of new and alternative approaches to enhance work practices and outcomes, and accepts the need to consider change • Makes decisions quickly and intuitively in familiar situations requiring immediate attention, drawing on past experience to identify key variables and determine the best course of action • When dealing with complex issues, may use intuition to identify the general problem area, switching to analytical processes to clarify goals and key issues, and using lateral thinking processes to generate possible communications solutions

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Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN501 Provide consultancy and technical support in the customer premises equipment sector	ICTTEN5024A Provide consultancy and technical support in the customer premises equipment sector	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN501 Provide consultancy and technical support in the customer premises equipment sector

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- provide consultancy advice related to a full range of customer premises' equipment (CPE) products including:
  - product models and equipment types
  - peripherals
  - facilities, including network facilities
  - system features
- provide alternative solutions where customer's needs cannot be met precisely
- prepare clear and concise reports to customers complete with recommendations and supporting data, including full financial considerations
- provide regular updates to both company personnel and clients as to the latest product and technical information.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- summarise common customer telecommunications applications and related equipment
- outline connections to carrier infrastructure or equipment
- identify and describe current legislation relating to installation of telecommunications equipment and connection to carrier services
- explain the purpose of enterprise operations and policies
- summarise internet protocol (IP) networks
- outline new and emerging telecommunications technologies
- define 'customer premises' equipment.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- a site with network or computer layout documentation and premises plans
- network components
- equipment specifications
- organisational guidelines
- business plan or model
- relevant legislation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN502 Design a telecommunications project

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge to scope requirements, assess land site suitability, arrange site acquisition, and produce building design plans for a telecommunications building project.

It applies to individuals working for private and public organisations who combine technical design and organisational skills to apply planning principles for provisioning of the various building projects and technologies within a telecommunications network to meet future customer demands.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Scope design options	1.1 Determine the nature, purpose and type of new facilities in the proposed project from project specifications obtained from planners 1.2 Analyse project brief to scope requirements of the project and consider design options with consideration to legislation governing carriers in Australia

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ELEMENT	PERFORMANCE CRITERIA
	1.3 Evaluate design requirements to determine optimal site selection for the project to house facilities 1.4 Arrange an environmental impact study (EIS) to be conducted on the selected site with project requirements to assess suitability of the site
2. Evaluate and arrange land acquisition	2.1 Evaluate findings of the EIS to determine suitability of the land for the project 2.2 Prepare a justification report on a favourable EIS and consult affected property owners to establish a base for negotiation 2.3 Determine potential for land acquisition or purchase from analysis of previously gathered data and EIS findings and ensure compliance with regulations and legislation
3. Analyse area and select design option	3.1 Analyse physical attributes of the area, possible environmental impacts and previously collected data to prepare design options 3.2 Prepare field sketch according to enterprise requirements and develop solutions to any obvious physical impediment to construction 3.3 Produce design options for the area that are viable for the enterprise and recommend a preferred option with justifications 3.4 Evaluate selection of preferred option to ensure enterprise business strategy outcomes and policies are satisfied
4. Notify interested parties	4.1 Assess resources available for project implementation to ensure works are within the enterprise's schedule 4.2 Notify interested parties of the type, extent and duration of proposed works according to enterprise policy 4.3 Obtain all required written permission from interested parties and forward to those who will carry out the job
5. Produce design plan and documentation	5.1 Prepare design plan to enterprise requirements including relevant geographical and topological information 5.2 Indicate location and specification of works and network equipment accurately and clearly 5.3 Specify resources needed to undertake the project 5.4 Update enterprise information systems according to enterprise guidelines and industry practice 5.5 Produce a complete design report and present to management for approval

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.3, 2.1, 2.3, 3.2, 3.4, 4.2, 5.4	• Identifies, analyses and evaluates complex text to determine legislative and business requirements to assist with project planning
Writing	2.2, 3.2, 3.3, 4.2, 5.1-5.5	• Prepares written reports and workplace documentation that communicate complex information clearly and effectively
Oral Communication	2.2, 4.2, 5.2, 5.3	• Clearly articulates requirements to internal and external personnel on technical and operational matters using language appropriate to audience and environment • Employs listening and questioning techniques to confirm understanding
Navigate the world of work	1.2, 2.3	• Keeps up-to-date with legislation and regulations affecting work and considers implications of these when negotiating and planning work
Get the work done	1.1, 1.4, 3.1, 3.4, 4.1, 4.3	• Understands key principles and concepts underpinning design and operation of digital systems and tools, and applies these as required • Applies formal processes when planning tasks, producing plans with logically sequenced steps, reflecting the needs of others • Implements actions according to a predetermined plan, making adjustments if necessary • Makes decisions quickly and intuitively in familiar situations requiring immediate attention, drawing on past experience to identify key variables and determine the best course of action • Uses analytical processes to decide on a course of action, establishing criteria for deciding between options and seeking input and advice from others before taking action when necessary

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTTEN502 Design a telecommunications project	ICTTEN5037A Design a telecommunications project	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN502 Design a telecommunications project

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- scope design options
- recommend acquisition of land
- prepare justification report including evaluation of environmental impact study (EIS) findings
- produce design options
- prepare completed building design plan for a telecommunications project.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain access networks
- describe building codes and regulations relating to telecommunications installations
- appraise computer aided design (CAD) software packages used for telecommunications designs
- define core networks and specify the foundation design principles
- describe the Environmental Protection Act and its impact on designing a telecommunications project
- explain implications of heritage listings on a site
- summarise information found in EISs
- explain network performance and capacity
- outline networks planning and procedures
- explain site surveys
- describe acts and regulations attributed to telecommunications.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- sites on which projects may be designed
- CAD drawing facilities
- relevant databases, legislative requirements and other site and project related documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN503 Design an electronic system for a telecommunications network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to design, and confirm specifications and compatibility for additional telecommunications network equipment.

It applies to individuals working as field officers, technicians or technical supervisors for carriers, contractors or other service providers who assess the need for additional equipment, including voice over internet protocol (VoIP), biometric identification, radio frequency identification (RFID) and security system equipment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Evaluate system needs	1.1 Determine need for additional electronic equipment from telecommunications project plan 1.2 Specify purpose of equipment and ascertain need for additional network equipment with customer

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ELEMENT	PERFORMANCE CRITERIA
2. Analyse network and select design option	2.1 Analyse possible impacts on network and network service requirements 2.2 Generate options for system design that are realistic for the enterprise and network 2.3 Evaluate and select preferred option, based on enterprise business strategy outcomes, service policy and compliance with relevant legislation 2.4 Discuss and confirm selected option with customer
3. Assess system compatibility	3.1 Assess compatibility of each equipment unit and intended use with other installed units, from system plans, equipment manuals, installation environment and industry knowledge 3.2 Modify design accordingly 3.3 Provide customer with design and obtain sign-off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 2.3, 3.1	• Identifies, analyses and evaluates information to determine legislative and technical requirements to assist with project planning
Writing	1.2, 3.2	• Prepares written reports and workplace documentation that communicates complex information clearly and effectively
Oral Communication	1.2, 2.4	• Liaises with customers and technical staff to ensure requirements are properly understood • Employs listening and questioning techniques to confirm understanding
Navigate the world of work	2.3	• Keeps up-to-date with relevant legislation and considers implications of these when planning work
Interact with others	3.3	• Selects and uses appropriate conventions and protocols when communicating with customers, and in a range of work contexts

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Get the work done	2.1-2.3, 3.1	• May invest time in developing and shaping several options before making a final choice, using a combination of lateral and analytical thinking to tailor and strengthen an idea to suit needs, resources and constraints • Uses formal and informal processes to monitor implementation of solutions, and reflects on outcomes • Understands key principles and concepts underpinning design and operation of digital systems and tools, and applies these as required • Applies formal processes when planning tasks, producing plans with logically sequenced steps, reflecting the needs of others • Implements actions according to a predetermined plan, making adjustments if necessary • Makes decisions quickly and intuitively in familiar situations requiring immediate attention, drawing on past experience to identify key variables and determine the best course of action • Uses analytical processes to decide on a course of action, establishing criteria for deciding between options, and seeking input and advice from others before taking action when necessary

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN503 Design an electronic system for a telecommunications network	ICTTEN5038A Design an electronic system for a telecommunications network	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN503 Design an electronic system for a telecommunications network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- evaluate system need for additional electronic equipment and design options
- analyse network and design systems
- assess system compatibility.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- review electrical and optical properties of telecommunications systems
- outline integration, compatibility and interoperability of equipment
- summarise legislation and licensing relevant to installation of telecommunications equipment including spectrum allocation
- define power requirements and electrical safety issues associated with electronic system design
- outline transmission type and signals that may be encountered.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- telecommunications network where additional equipment design may be conducted
- relevant regulatory and equipment documentation that impacts electronic system design.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN504 Acceptance test new systems and equipment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to ensure new system readiness by inspecting and testing equipment to confirm compliance and performance.

It applies to individuals working as field officers, technicians or technical supervisors for carriers, contractors or other service providers.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to conduct acceptance testing	1.1 Obtain installation and commissioning documents and planning specifications from appropriate personnel to ensure the installed system is as planned and specified 1.2 Visually inspect new installation and verify compliance of the system against relevant legislation, codes, regulations and standards 1.3 Select and obtain required test equipment for suitability of acceptance testing 1.4 Prepare acceptance schedule and test criteria in consultation with

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ELEMENT	PERFORMANCE CRITERIA
	appropriate personnel
2. Conduct acceptance testing	2.1 Undertake and analyse performance tests safely to ensure measurements meet with predetermined specifications and approved operating margins 2.2 Verify performance levels to within tolerance specifications 2.3 Test protection mechanisms to ensure performance criteria meets the specified standard 2.4 Test alarms for satisfactory operation 2.5 Refer identified problems to appropriate personnel for remedial action 2.6 Record all acceptance test procedures and results
3. Complete administrative tasks	3.1 Complete acceptance documentation including recommendations 3.2 Notify appropriate personnel and obtain sign-off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.2, 2.1, 2.2	• Identifies, analyses and evaluates information to determine regulatory and technical requirements to assist with project planning
Writing	1.4, 2.6, 3.1	• Prepares written reports and workplace documentation that communicates complex information clearly and effectively
Oral Communication	1.4	• Liaises with appropriate personnel and customers to ensure requirements are properly understood • Participates in verbal exchanges employing listening and questioning techniques to confirm understanding
Numeracy	2.1, 2.2	• Uses mathematical formulae to calculate measurements, analyse results and make adjustments to equipment and settings
Navigate the world of work	1.2	• Keeps up-to-date with relevant legislation and considers implications of this when planning work, with specific reference to safety

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Interact with others	1.1, 1.4, 2.5, 3.2	• Selects and uses appropriate conventions and protocols when communicating with stakeholders in a range of work contexts • Collaborates and cooperates with others to achieve required outcomes
Get the work done	1.1, 1.3, 2.3-2.5	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context to identify relevant information, test strategies and resources • Understands key principles and concepts underpinning design and operation of digital systems and tools, and applies these as required • Implements actions according to a predetermined plan, making adjustments if necessary • Makes decisions quickly and intuitively in familiar situations requiring immediate attention, drawing on past experience to identify key variables and determine the best course of action • Uses analytical processes to decide on a course of action, establishing criteria for deciding between options, and seeking input and advice from others before taking action when necessary

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN504 Acceptance test new systems and equipment	ICTTEN5058A Acceptance test new systems and equipment	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN504 Acceptance test new systems and equipment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- inspect new installation and verify compliance against installation plans
- prepare acceptance schedule and test criteria
- undertake relevant acceptance tests and analysis
- comply with specified performance criteria, related work health and safety (WHS) requirements and work practices.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline cabling, terminations and supporting structures that may be encountered in the system under inspection
- explain common performance levels and standards
- explain electrical and or optical properties to be measured
- consider WHS issues that impact testing systems and equipment
- evaluate typical network topologies, switching, routing and transmission techniques
- evaluate transmission type and signals that may be encountered
- explore various types of test equipment suitable for testing to be performed.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

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- sites where acceptance tests may be conducted
- testing equipment currently used in industry
- relevant regulatory and equipment documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN505 Commission telecommunications network equipment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to check plans, obtain and properly handle equipment and supplies, undertake tests, and complete administrative tasks.

It applies to individuals working as field officers, technicians or technical supervisors for carriers, contractors or other service providers

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for commissioning procedures	1.1 Prepare for work following work health and safety (WHS) requirements 1.2 Organise resources based on existing and potential site hazards 1.3 Contact network operations personnel for site access and network specifications 1.4 Determine the type and complexity of the network equipment from specifications

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ELEMENT	PERFORMANCE CRITERIA
	1.5 Establish commissioning dates and confirm with all parties 1.6 Determine commissioning parameters according to specification, and establish planned outage if required 1.7 Obtain test equipment and check for suitability and accuracy 1.8 Produce a preliminary commissioning plan according to manufacturer's instructions and company guidelines for discussion with the customer 1.9 Inform affected customers of impending action and likely timing and impact by the work
2. Organise planned outages if necessary	2.1 Negotiate outage times with appropriate groups and affected customers to minimise any disruptions 2.2 Develop contingency plans if required and arrange for emergency communications 2.3 Notify alarm management centre of action planned 2.4 Obtain authority to proceed from relevant control centre and notify customers affected by the outage
3. Complete installation procedures of network equipment	3.1 Install applications programmes and management data according to specification to complete installation procedures 3.2 Complete all hardware connections according to commissioning instructions 3.3 Undertake all specified performance tests to ensure operation meets all prescribed parameters and specifications as detailed in the original design brief 3.4 Undertake tests to verify compatibility between the hardware and software 3.5 Correct performance defects or bring to the attention of designers for corrective action
4. Complete commissioning procedures with network management	4.1 Test alarms in conjunction with network management and operational groups to maintain network integrity 4.2 Simulate traffic tests through the new installation to emulate a live network 4.3 Test installed specific equipment features and operations administration maintenance system according to instructions 4.4 Diagnose, repair or escalate faults detected to the appropriate area when fault cannot be clearly diagnosed or repaired 4.5 Initiate vendor-related tests where required

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ELEMENT	PERFORMANCE CRITERIA
5. Finalise commissioning tasks	5.1 Complete administrative tasks as required by enterprise 5.2 Undertake operational staff training where required 5.3 Restore site to customer's satisfaction 5.4 Notify customer and obtain sign-off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Learning	5.2	• Accepts new learning challenges, undertaking further training when required to contribute to ongoing organisational improvement
Reading	1.1, 1.4, 1.6, 1.8, 3.1-3.3, 4.3	• Identifies, analyses and evaluates information to determine regulatory and technical requirements to assist with project planning
Writing	1.3, 1.5, 1.8, 1.9, 2.1-2.4, 5.1	• Prepares written reports and workplace documentation that communicates complex information clearly and effectively
Oral Communication	1.3, 1.5, 1.9, 2.1-2.4	• Liaises with appropriate technical personnel and customers to ensure requirements are properly understood • Employs listening and questioning techniques to confirm understanding
Numeracy	3.3, 3.4, 4.1, 4.3	• Uses mathematical formulae to make calculations and interpret test equipment settings and readings
Navigate the world of work	1.1	• Keeps up-to-date with relevant legislation and considers implications of this when planning work, with specific reference to safety
Interact with others	2.4, 5.4	• Selects and uses communication conventions and protocols to suit purpose and audience
Get the work done	1.2, 1.4, 1.5, 1.7, 2.2, 3.1- 3.5, 4.1, 4.2-4.5, 5.1, 5.3	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context to identify relevant information, test strategies and resources • Understands key principles and concepts underpinning

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		design and operation of digital systems and tools and applies these as required • Implements actions according to a predetermined plan, making adjustments if necessary • Makes decisions quickly and intuitively in familiar situations requiring immediate attention, drawing on past experience to identify key variables and determine the best course of action • Uses analytical processes to decide on a course of action, establishing criteria for deciding between options and seeking input and advice from others before taking action when necessary

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN505 Commission telecommunications network equipment	ICTTEN5059A Commission telecommunications network equipment	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN505 Commission telecommunications network equipment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- interact with enterprise personnel, customers and other contractors, keeping a customer focus and consideration of customer needs
- produce an outage management plan and contingency plan
- negotiate network activity and timing of commissioning
- commission networking equipment to plan or specification
- implement test plan, and interpret and analyse results against expected outcomes
- test alarms and alarm regime
- analyse faults, problems and anomalies and provide solutions
- comply with all related work health and safety (WHS) requirements and work practices.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline electrical and/or optical properties to be measured
- evaluate a range of networking equipment and their operation
- consider legislation and licensing that govern installation of telecommunications equipment
- define spectrum allocation
- outline network operation procedures
- summarise power requirements and electrical safety
- describe transmission types and signals that may be encountered in telecommunications networks
- summarise the various tests and test equipment required for commissioning.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- sites on which installation and commissioning procedures can be conducted
- relevant regulatory and equipment documentation impacting commissioning
- testing equipment currently used in industry.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN506 Integrate new systems and equipment into the telecommunications network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to follow predetermined procedures to ensure operability of the system while minimising impact on affected customers.

It applies to individuals working as field officers, technicians or technical supervisors, for telecommunications carriers, contractors or other service providers, who install new, additional and replacement equipment in telecommunications systems and networks, including support and administrative infrastructures for integration of new and emerging internet protocol (IP) based technologies.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan integration strategy	1.1 Determine nature and scope of the integration activity of systems from appropriate personnel 1.2 Prepare an integration management plan in agreement with

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ELEMENT	PERFORMANCE CRITERIA
	appropriate personnel 1.3 Obtain outage management plan if available, otherwise prepare a contingency plan to ensure the system integration goes according to a plan 1.4 Identify affected systems, traffic and customers 1.5 Notify alarm management centre of action planned and obtain authority to proceed 1.6 Notify customers affected by the outage of time and likely duration
2. Integrate and test new system in the network	2.1 Plan and conduct activities over a set of integration phases safely and according to the integration management plan 2.2 Load operational software according to specification to ensure interoperability of new and existing system 2.3 Undertake tests by simulating network traffic and ensure test results are recorded and stored according to enterprise requirements 2.4 Analyse test results and ensure established parameters have all been met 2.5 Evaluate problems during the testing phase and rectify or escalate procedure 2.6 Analyse alarms for fault conditions in conjunction with the network management centre 2.7 Locate and detect faults within capability, or escalate according to enterprise policy 2.8 Check operations administrative maintenance system and alarms are connected according to instruction manual 2.9 Activate new alarms and deactivate old alarms
3. Complete administrative tasks	3.1 Complete integration records according to manufacturer's specification and enterprise policy and make recommendations for improvement for future planning 3.2 Notify appropriate personnel of project completion and obtain sign-off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

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Skill	Performance Criteria	Description
Reading	2.2-2.4, 2.8, 3.1	• Identifies, analyses and evaluates information to determine regulatory and technical requirements to assist with project planning
Writing	1.2-1.6, 2.3, 3.1	• Prepares written reports and workplace documentation that communicate complex information clearly and effectively
Oral Communication	1.1, 1.2, 1.5, 1.6	• Participates in verbal exchanges with personnel and customers to ensure requirements are properly understood • Employs listening and questioning techniques to confirm understanding
Numeracy	2.4	• Uses mathematical formulae to calculate measurements, analyse results and make adjustments to equipment and settings
Navigate the world of work	2.1, 2.7, 3.1	• Keeps up-to-date with relevant legislation and considers implications of this when planning work, with specific reference to safety • Adheres to organisational procedures and protocols in completing work tasks
Interact with others	1.1, 1.2, 1.5, 1.6, 3.2	• Selects and uses communication conventions and protocols to suit purpose and audience
Get the work done	1.3, 1.4, 2.1, 2.2, 2.3, 2.5-2.9	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context to identify relevant logistical requirements, test strategies and resources • Understands key principles and concepts underpinning design and operation of digital systems and tools, and applies these as required • Implements actions according to a predetermined plan, making adjustments if necessary • Makes decisions quickly and intuitively in familiar situations requiring immediate attention, drawing on past experience to identify key variables and determine the best course of action • Uses analytical processes to decide on a course of action, establishing criteria for deciding between options, and seeking input and advice from others before taking action when necessary

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTTEN506 Integrate new systems and equipment into the telecommunications network	ICTTEN5060A Integrate new systems and equipment into the telecommunications network	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN506 Integrate new systems and equipment into the telecommunications network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- develop a contingency plan
- implement an integration management plan
- test systems and equipment and associated features being integrated
- apply enterprise escalation and outage procedures
- negotiate procedures and activity on the network and timing of integration
- integrate new systems and equipment to plan and specifications.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- summarise connections to carrier infrastructure or customer interface units (CIU)
- describe electrical and/or optical properties to be measured
- consider health and safety issues, including electrical, optical and electromagnetic radiation (EMR) when working with telecommunications networks
- describe telecommunication network equipment and emerging technology networks
- evaluate suitable tests and test equipment types
- explain typical performance parameters and faults that may be encountered in network equipment and related connection and transmission media.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- sites on which integration procedures can be conducted
- relevant regulatory and equipment documentation that impacts integration
- testing equipment currently used in industry
- capacity to simulate network traffic
- a network and equipment for integration
- equipment and systems manuals, specifications and enterprise policies.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN507 Cut over new and replacement network equipment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to check plans, obtain equipment and supplies, initiate tests and complete administrative tasks.

It applies to individuals who may be field officers, technicians or technical supervisors for carriers, contractors or other service providers, who are involved in fast changeover of new and existing equipment in telecommunications networks, including digital switching and transmission, wireless and optical networks.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan cut over strategy	1.1 Determine the nature and scope of cut over activity from appropriate personnel 1.2 Prepare a cut over management plan in agreement with appropriate personnel and in line with regulations and service obligations 1.3 Obtain outage management plan if available, otherwise prepare a

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ELEMENT	PERFORMANCE CRITERIA
	contingency plan to ensure system integration proceeds according to plan 1.4 Notify alarm management centre of action planned and obtain authority to proceed 1.5 Notify customers affected by the outage of time and likely duration
2. Cut over and test equipment into service	2.1 Perform cut over activities in a safe manner with minimal interruption to service and according to the cut over management plan 2.2 Conduct tests specified in cut over plan, according to technical manuals and specifications 2.3 Record and assess test results and ensure problems identified during cut over are rectified or escalated according to enterprise procedures 2.4 Analyse alarms for fault conditions in conjunction with network management centre 2.5 Enact contingency plans in the event of major problems during cut over
3. Complete administrative tasks	3.1 Complete test result sheets and hand over to operational personnel according to enterprise requirements 3.2 Ensure site is cleaned and ready for operational staff 3.3 Complete work documentation and administrative tasks and forward to appropriate area according to enterprise policy 3.4 Notify appropriate personnel of project completion and obtain sign-off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	2.1-2.3, 3.1, 3.3	• Identifies, analyses and evaluates equipment specifications, equipment readings and settings
Writing	1.1, 1.3, 2.3, 3.1, 3.3	• Prepares written reports and workplace documentation that communicate complex information clearly and

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		effectively
Oral Communication	1.1, 1.2, 1.5	• Participates in verbal exchanges with personnel and customers to ensure requirements are properly understood • Employs listening and questioning techniques to confirm understanding
Numeracy	2.3	• Uses mathematical formulae to calculate measurements, analyse results and make adjustments to equipment and settings
Navigate the world of work	2.1, 3.2, 3.3	• Works independently and collectively within broad parameters, with a strong sense of responsibility and ownership of goals, plans, decisions and outcomes, with specific reference to safe working practices and requirements
Interact with others	1.1, 1.2, 1.4, 1.5, 3.1, 3.4	• Considers purpose and possible actions to take as a result of any work related communication • Selects appropriate communication protocols and conventions in a broad range of work contexts, with a growing awareness of subtle impacts of choices made
Get the work done	1.1, 1.3, 2.2-2.5, 3.3, 3.4	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context, to identify relevant logistic requirements, test strategies and resources • Understands key principles and concepts underpinning design and operation of digital systems and tools, and applies these as required • Implements actions according to a predetermined plan, making adjustments if necessary • Makes decisions quickly and intuitively in familiar situations requiring immediate attention, drawing on past experience to identify key variables and determine the best course of action • Uses analytical processes to decide on a course of action, establishing criteria for deciding between options and seeking input and advice from others before taking action when necessary

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Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN507 Cut over new and replacement network equipment	ICTTEN5061A Cut over new and replacement network equipment	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN507 Cut over new and replacement network equipment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- develop and implement a cut over plan and an outage plan
- develop a contingency plan
- apply enterprise escalation and outage procedures
- cut over and test network equipment within an industry acceptable time period.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain electrical and optical properties to be measured
- determine appropriate legislation and licensing surrounding installation of telecommunications equipment
- summarise power requirements and electrical safety
- evaluate types of test equipment and testing procedures suitable for tests to be performed
- explain transmission hierarchy and switching principles
- outline transmission type and signals that may be encountered.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- a network and equipment for cut over
- equipment currently used in industry

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- systems manuals, specifications and enterprise policy.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN508 Locate, diagnose and rectify complex faults

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to identify faults in upstream or downstream services that may require involvement of third party providers.

It applies to individuals working as telecommunications officers, installers, maintenance staff, and manufacturer or equipment specialists. They must work closely with other personnel and rectify technical faults in a timely manner.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to locate and rectify complex faults	1.1 Prepare for given work according to relevant legislation, codes, regulations and standards 1.2 Notify client to arrange site access 1.3 Obtain and interpret results of any action taken by first fault repairer 1.4 Obtain fault history to establish any fault patterns

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ELEMENT	PERFORMANCE CRITERIA
	1.5 Obtain all available data on system equipment to assist with fault diagnosis 1.6 Develop strategies for identification and repair in discussion with other engineering and technical personnel 1.7 Obtain tools and test equipment relevant to the identified system type and fault 1.8 Set up equipment according to manufacturer's specifications and safe work practices and reconfigure as required
2. Locate and diagnose faults	2.1 Use methodical and safe work practices suitable for system and problem type to identify system fault 2.2 Isolate and test fault progressively to remove likely variables from assessment, and record test results 2.3 Refer faults that may involve third party services, if required 2.4 Diagnose fault in the shortest time possible with minimum inconvenience to other client activity 2.5 Provide regular progress reports to clients 2.6 Raise fault identification to a national support level within a specified timeframe, if required 2.7 Undertake guidance from national support in fault diagnosis as required 2.8 Negotiate any necessary system downtime with clients
3. Rectify fault	3.1 Determine options to rectify fault including any system downtime and present to client for decision 3.2 Rectify fault totally, partially or provide temporary solution 3.3 Replace or repair faulty parts or equipment according to service agreement 3.4 Reprogram equipment as required 3.5 Dismantle and remove any temporary service in a safe and efficient manner where appropriate 3.6 Perform repair under national support guidance as required 3.7 Perform routine checks to identify likelihood of further or likely problems 3.8 Rectify any further problems identified, or bring to the attention of the customer for decision on further action
4. Clean up worksite and complete records	4.1 Produce a report on fault diagnosis and rectification 4.2 Remove and dispose of waste and debris from worksite

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ELEMENT	PERFORMANCE CRITERIA
	according to environmental requirements 4.3 Ensure changes made to work area during fault repair are restored to client's satisfaction 4.4 Complete all records, and explain and justify faults and rectification action taken

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.3, 1.8, 3.3	• Identifies, analyses and evaluates technical documentation including codes, standards and regulatory information
Writing	1.2, 2.2, 2.5, 2.8, 3.8, 4.1, 4.4	• Prepares clear and concise written reports and workplace documentation, incorporating technical language to communicate complex information clearly and effectively
Oral Communication	1.2, 1.6, 2.5, 2.8, 3.8, 4.3	• Liaises and negotiates with clients, repairers and technical staff using appropriate strategies to extract main ideas and information from oral texts regarding technical and operation matters • Employs listening and questioning techniques to confirm understanding
Numeracy	2.1, 2.2	• Uses mathematical formulae to interpret technical data, such as specifications of equipment operations
Navigate the world of work	1.1, 3.5, 4.2	• Takes personal responsibility for adherence to legal and regulatory responsibilities and organisational polices and protocols relevant to own work
Interact with others	2.6-2.8, 3.1, 3.8	• Selects appropriate protocols and conventions for communicating with technical personnel and customers in a broad range of work contexts • Collaborates with others to negotiate agreeable outcomes
Get the work done	1.3-1.8, 2.1-2.4, 3.1-3.4, 3.6-3.8	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context to identify and rectify technical faults

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		• Understands key principles and concepts underpinning design and operation of digital systems and tools, and applies these as required • Implements actions according to a predetermined plan, making adjustments if necessary • Makes decisions quickly and intuitively in familiar situations requiring immediate attention, drawing on past experience to identify key variables and determine the best course of action • Uses analytical processes to decide on a course of action, establishing criteria for deciding between options, and seeking input and advice from others before taking action when necessary

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN508 Locate, diagnose and rectify complex faults	ICTTEN5083A Locate, diagnose and rectify complex faults	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN508 Locate, diagnose and rectify complex faults

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- methodically analyse fault details and diagnose potential faults
- conduct advanced tests to determine complex network faults
- isolate and locate faults logically
- rectify faults using appropriate organisational procedures and work health and safety (WHS) requirements
- comply with all related WHS requirements and work practices.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain fault escalation procedures
- describe the most appropriate fault-finding techniques and test equipment required
- identify fault types and rectification methods
- list safety requirements and standards
- define the function of service agreements
- outline types of networks and equipment including:
  - access
  - broadband deployment
  - cabling
  - customer premises' equipment (CPE)
  - internet protocol (IP) networks for enterprise and customer systems and installations
  - local area networks (LANs)
  - telephony

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  - wide area networks (WANs)
- outline workplace environment and practices.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- sites on which fault diagnostics may be conducted
- testing equipment currently used in industry
- relevant regulatory and equipment documentation impacting complex fault repairs.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN509 Provide expert advice and support on complex faults

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to methodically diagnose complex faults, and organise repair or replacement of defective parts for customer premises' equipment (CPE).

It applies to individuals who work as telecommunications officers, installers, maintenance staff, and manufacturers or equipment specialists employed in an advisory and technical rectification role for commercial or residential installations.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish background information	1.1 Contact client to identify type of fault and occurrence 1.2 Obtain report of any action taken by first fault repairer and subsequent result 1.3 Analyse fault history to establish any fault patterns, including questioning personnel involved in previous fault repair if relevant 1.4 Develop strategies for identification and repair using advice from

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ELEMENT	PERFORMANCE CRITERIA
	other engineering and technical personnel 1.5 Refer to relevant legislation, codes, regulations and standards relating to repair 1.6 Inform customer of issues and possible solutions
2. Undertake fault diagnostic	2.1 Isolate fault progressively using a fault identification approach to remove likely variables from assessment 2.2 Identify fault in the shortest time possible or escalate to appropriate level 2.3 Seek back-up support from the product manufacturer when required
3. Organise fault rectification	3.1 Determine options to rectify fault, including any downtime, and present to customer for decision 3.2 Replace or repair defective parts or equipment according to service agreement 3.3 Reprogram equipment as required 3.4 Perform work safely, for both the repairer and customer 3.5 Dismantle and remove temporary service safely and efficiently, where appropriate 3.6 Provide on-site repair staff with clear and precise instructions on fault rectification where appropriate
4. Document fault details	4.1 Record details of fault and actions taken to find, repair and store for future reference 4.2 Advise product manufacturer of fault and repair details if applicable 4.3 Recommend changes to product or product model design where appropriate 4.4 Advise client and obtain sign-off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance	Description

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	Criteria	
Reading	1.3, 3.2	• Identifies, analyses and evaluates technical documentation including plans, codes, standards and regulatory information
Writing	1.1, 1.4, 1.6, 2.3, 3.6, 4.1, 4.2	• Prepares clear and concise written reports and workplace documentation incorporating technical language to communicate complex information clearly and effectively
Oral Communication	1.1, 1.3, 1.4, 1.6, 2.3, 3.1, 3.6, 4.2-4.4	• Participates in exchanges with internal and external personnel using appropriate strategies to extract main ideas and information from oral texts • Employs listening and questioning techniques to confirm understanding
Numeracy	2.1, 3.3	• Uses mathematical formulae to interpret technical data and measurements relating to equipment operations
Navigate the world of work	1.5, 3.4, 3.5	• Takes personal responsibility for adherence to legal and regulatory responsibilities and organisational policies and protocols relevant to own work
Interact with others	1.1, 1.4, 1.6, 2.3, 4.2, 4.4	• Collaborates with others to achieve joint outcomes, playing an active role in negotiating positive outcomes • Selects and uses appropriate conventions and protocols when communicating with customers and personnel in a range of work contexts
Get the work done	1.2, 2.1, 2.2, 3.2, 3.3	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context to identify and rectify technical faults • Understands key principles and concepts underpinning design and operation of digital systems and tools, and applies these as required • Implements actions according to a predetermined plan, making adjustments if necessary • Makes decisions quickly and intuitively in familiar situations requiring immediate attention, drawing on past experience to identify key variables and determine the best course of action • Uses analytical processes to decide on a course of action, establishing criteria for deciding between options, and seeking input and advice from others when necessary

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTTEN509 Provide expert advice and support on complex faults	ICTTEN5084A Provide expert advice and support on complex faults	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN509 Provide expert advice and support on complex faults

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- methodically identify and rank likely causes of faults
- analyse and interpret test results
- apply enterprise escalation and outage procedures
- prioritise fault rectification in a timely manner and report progress
- organise repair of fault and conduct of tests to verify outcomes
- prepare documentation of fault:
  - nature
  - location
  - likely causes
  - repair methodology
  - recommendations relating to system redesign or specification.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain features and operating requirements of test equipment
- summarise information required to operate remote diagnostic equipment according to a test specification
- outline legislation, codes of practice and other formal agreements that impact the work activity
- explain manufacturer’s requirements for effective operation of equipment
- summarise specific work health and safety (WHS) requirements relating to the activity and site conditions

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- outline test methods and performance requirements
- explain typical issues and challenges that occur on site.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- sites on which fault diagnostics may be conducted
- testing equipment currently used in industry
- relevant regulatory and equipment documentation impacting complex fault repairs.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN510 Undertake planned outage management

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to develop strategies for dealing with customers, operational staff and associated system restoration.

It applies to individuals working as network engineering staff involved with the management of planned outages resulting from the fast changeover of new and existing equipment in telecommunications networks, including digital switching and transmission, wireless and optical networks.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for implementation of planned outage	1.1 Determine requirements and purpose of the outage from the outage plan, obtained from relevant personnel 1.2 Analyse all relevant data to determine likely impact of the outage on clients and the network 1.3 Notify customer of outage work and disruption to service 1.4 Prepare for contingencies according to contingency plan, as

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ELEMENT	PERFORMANCE CRITERIA
	specified in the outage plan
2. Implement planned outage	2.1 Conduct and monitor outage work safely as prescribed, and implement contingency plan if required 2.2 Restore system to normal operational status and conduct performance tests of the system according to specifications 2.3 Analyse test results and certify system is operating to manufacturer's specifications 2.4 Notify relevant personnel of competed outage work and of service restoration
3. Undertake administrative tasks	3.1 Document problems that occurred during outage or restoration of service and report these as continuous improvement according to enterprise quality assurance policy 3.2 Complete required documentation and update records to reflect any changes made in the course of service restoration, according to enterprise policy

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 1.4, 2.2, 2.3, 3.1, 3.2	• Identifies, analyses and evaluates technical documentation and applies appropriate strategies to construct meaning from complex texts
Writing	1.3, 2.4, 3.1, 3.2	• Prepares clear and concise written reports and workplace documentation, incorporating technical language to communicate complex information clearly and effectively
Oral Communication	1.1, 1.3, 2.4	• Liaises and negotiates with customers and technical staff to ensure service level agreement requirements are known and can be met within timeframes • Employs listening and questioning techniques to confirm understanding
Numeracy	1.2, 2.3	• Uses mathematical formulae to interpret technical data and make appropriate calculations to determine equipment calibrations

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Navigate the world of work	2.1, 3.1, 3.2	• Takes personal responsibility for adherence to organisational policies and protocols relevant to own work
Interact with others	1.1, 1.3, 2.4	• Selects and uses appropriate conventions and protocols when communicating with customers and personnel in a range of work contexts
Get the work done	1.4, 2.1, 2.2	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context to implement outage management plans and contingency plans • Understands key principles and concepts underpinning design and operation of digital systems and tools, and applies these as required • Makes decisions quickly and intuitively in familiar situations requiring immediate attention, drawing on past experience to identify key variables and determine the best course of action • Uses analytical processes to decide on a course of action, establishing criteria for deciding between options

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN510 Undertake planned outage management	ICTTEN5092A Undertake planned outage management	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN510 Undertake planned outage management

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- implement outage plan
- comply with service assurance guidelines
- comply with work health and safety (WHS) requirements and work practices
- conduct performance tests to verify normal operation.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain electrical and optical principles
- summarise legislation and licensing surrounding installation of telecommunications equipment
- outline power requirements and electrical safety
- summarise protection switching
- clarify telecommunications networks
- describe test equipment types suitable for tests to be undertaken
- explain transmission hierarchy and switching principles
- summarise transmission type and signals that may be encountered.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- sites on which outage management may be conducted
- testing equipment currently used in industry
- manufacturer's and enterprise equipment documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN511 Administer a data communications network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to establish and configure a data communications network, maintain systems and applications, administer user accounts and diagnose and isolate system faults.

It applies to individuals working as technical staff who administer a local area network (LAN) or wide area network (WAN). They may make use of enterprise procedures and flow charts, and third party test routines analysing performance and functionality of a live data communications network.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Install and configure network	1.1 Prepare and confirm, with relevant personnel, the physical and logical structure of a LAN design to resolve hardware and software compatibility conflicts 1.2 Prepare file server and install network server software 1.3 Execute workstation boot procedures and verify network and

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ELEMENT	PERFORMANCE CRITERIA
	work station functionality 1.4 Document network physical connections and workstation characteristics
2. Set up network facilities	2.1 Configure set-up procedures for a network print server, network printer and a shared file system 2.2 Connect a bridge or router between two networks 2.3 Set up a gateway for a network 2.4 Set up a logical disk or volume structure
3. Administer user accounts	3.1 Create a user account and a user log script 3.2 Produce a document of network users for notification of their access rights and privileges 3.3 Add and delete users to maintain an up-to-date user list 3.4 Establish disk quotas for users 3.5 Develop common user security procedures and set up user profiles
4. Install common applications	4.1 Install and configure an application in client-server mode 4.2 Establish security and multiple access to an application 4.3 Set up and configure an email client and browser for the client
5. Install and configure systems applications	5.1 Configure a backup system for redundancy, according to customer policy 5.2 Administer disk fault tolerance and redundancy techniques
6. Maintain system integrity	6.1 Implement system integrity and system monitoring techniques to provide a reliable customer data network 6.2 Use diagnostic software to detect and isolate system faults 6.3 Produce a report on network performance and fault occurrence for the customer, with recommendations for improving the integrity of the data communications network

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

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Skill	Performance Criteria	Description
Reading	5.1	• Identifies, analyses and evaluates technical documentation, such as software and hardware manuals and specifications and relevant enterprise policy and documentation
Writing	1.1, 1.4, 3.1-3.3, 3.5, 6.3	• Prepares clear and concise written reports and workplace documentation, incorporating technical language, to communicate complex information clearly and effectively
Oral Communications	1.1	• Establishes and maintains complex and effective communications in a broad range of contexts
Numeracy	1.3, 3.4, 6.1	• Analyses and synthesises highly embedded mathematical information while testing and analysing results
Get the work done	1.1-1.3, 2.1-2.4, 3.1, 3.4, 3.5, 4.1-4.3, 5.1, 5.2, 6.1, 6.2	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context to organise and implement testing and contingency plans • Uses digital technologies and systems to enter, store and present data, and diagnose faults • Uses intuition, analysis and lateral thinking processes to make decisions about complex issues

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTTEN511 Administer a data communications network	ICTTEN5147A Administer a data communications network	Updated to meet Standards for Training Packages.	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN511 Administer a data communications network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- establish and configure a data communications network
- set up and maintain systems, facilities, applications, and software
- administer user accounts
- diagnose and isolate system faults.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- determine features and operating requirements of data communications software and hardware for network systems
- outline manufacturer's requirements of testing software and equipment
- summarise test methods and performance requirements
- describe typical issues and challenges that occur when administering a data communications network.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- sites where communications network and systems user accounts can be administered
- equipment currently used in industry
- relevant regulations and company policies impacting communications network activities.

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Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN512 Design and implement an enterprise voice over

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to design and implement infrastructure required to enable enterprises to use voice over internet protocol (VoIP) and other packet-based services using converging network technologies.

It applies to individuals who combine significant technical expertise with a range of analytical, research and planning skills to develop and tailor internet protocol (IP) convergence solutions for particular business needs.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan and design VoIP infrastructure to meet business requirements	1.1 Ascertain end-user requirements in consultation with client 1.2 Select VoIP infrastructure in line with business and end-user requirements, within budget limitations 1.3 Select protocols for converged networks 1.4 Select hardware, software, network and security requirements

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ELEMENT	PERFORMANCE CRITERIA
	according to agreed business and end-user specifications 1.5 Investigate factors affecting bandwidth and calculate bandwidth usage for various codecs, including considerations of overhead, connection quality and connection speeds
2. Install and configure VoIP infrastructure to meet business requirements	2.1 Implement telephone number mapping (ENUM), number portability, end-point addressing, path selection, calling classes and overlapping number ranges 2.2 Install, configure and test gatekeepers 2.3 Install and test convergent terminal equipment and software 2.4 Install software, and configure and test VoIP services 2.5 Configure security access levels to safeguard data, making use of appropriate tools
3. Configure UC network	3.1 Obtain topology and components of UC network 3.2 Analyse potential of IP multimedia subsystem (IMS) network architecture to enable convergence of voice, video and data applications and various mobile network technologies over IP based layer 3.3 Incorporate use of a communications server to provide real-time multimedia communications 3.4 Select common video conferencing codecs according to standards and practices 3.5 Select voice and video conferencing hardware 3.6 Implement IP-private branch exchange (PBX) functionalities in the UC network
4. Test and evaluate performance of convergent networks	4.1 Develop possible network congestion solutions for common network congestions to meet the specified quality of service (QoS) 4.2 Provide solutions for problems with contacting emergency services 4.3 Analyse network traffic and resolve problems using packet sniffer, monitoring software and hardware solutions 4.4 Troubleshoot convergent communications over wireless networks 4.5 Analyse types and effects of attacks, including man-in-the-middle attacks 4.6 Plan ways to counteract denial of service (DoS) and distributed DoS (DDoS) attacks 4.7 Predict the impact of virtual local area network (VLAN)

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ELEMENT	PERFORMANCE CRITERIA
	hopping, media access control (MAC) address movements, additions and changes on network
5. Test and verify security access levels	5.1 Analyse types of intrusion detection 5.2 Monitor and evaluate capability and reliability of security systems 5.3 Make system alterations to ensure protection against known and potential threats 5.4 Verify and test user settings conform to security policies 5.5 Back-up, upgrade and scan systems to minimise attacks
6. Complete documentation and sign-off procedures	6.1 Complete required records and notify client 6.2 Remove installation waste and debris from worksite and dispose of according to environmental requirements to maintain safe worksite conditions 6.3 Reinstate site according to client and company requirements

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	3.4	• Identifies, analyses and evaluates standards to determine information and communications technology (ICT) requirements
Writing	6.1	• Prepares clear and concise workplace documentation incorporating technical language to communicate complex information clearly and effectively
Numeracy	1.2, 1.5	• Uses mathematical formulae and calculations to estimate project costs and bandwidth requirements
Navigate the world of work	6.2, 6.3	• Takes personal responsibility for adherence to legal and regulatory responsibilities and organisational policies and protocols relevant to own work
Interact with others	1.1, 6.1	• Selects and uses appropriate conventions and protocols when communicating with customers in a range of work contexts

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Get the work done	1.2-1.5, 2.1-2.4,	• Develops plans for complex, high impact activities with strategic implications • Implements actions according to a predetermined plan, making adjustments if necessary and addressing unexpected issues • Selects and uses digital technologies and systems to achieve work goals and enhance work processes • Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world • Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information and identifying and evaluating options against agreed criteria

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN512 Design and implement an enterprise voice over internet protocol and a unified communications network	ICTTEN5168A Design and implement an enterprise voice over internet protocol and a unified communications network	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN512 Design and implement an enterprise voice over

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- design and implement infrastructure for enterprise voice over internet protocol (VoIP) and unified communications (UC) systems to meet business requirements using converged networks
- evaluate network traffic protocols and bandwidth considerations
- configure a UC network
- assess performance of convergent networks
- test and verify security access levels.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- compare session initiation protocol (SIP), H.323 protocol and media gateway control protocol (MGCP) or media gateway control (Megaco)
- define latency, jitter and wander, and implement methods for reducing or eliminating them using jitter buffer, quality of service (QoS), traffic shaping and virtual local area networks (VLANs)
- describe the format of a SIP uniform resource identifier (URI)
- evaluate and implement SIP trunking to connect enterprise internet protocol (IP)-based communications systems over long distances
- identify common G.7xx codes and describe the impact of compression on voice quality
- define components of SIP
- examine functions of signalling protocols for converged networks
- summarise the following:
  - the client business domain, business function and organisation

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- current and emerging industry accepted hardware and software products
- current and emerging transmission technologies and protocols
- networking technologies.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- a live network
- networked computers
- network design documentation
- equipment specifications
- network components.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN513 Install, configure and test a local area network switch

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to undertake local area network (LAN) switch installation, configuration and testing in field work. It also applies to switching protocols and diagnostics required for integrating new and converging functionalities to the network.

It applies to individuals, employed by telecommunications companies and information communications technology (ICT) networking provisioning companies, who carry out installation, maintenance and upgrade of ICT networks.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to install the network switch	1.1 Prepare for installation in line with site-specific safety requirements and enterprise work health and safety (WHS) processes and procedures 1.2 Notify customer to arrange site access

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ELEMENT	PERFORMANCE CRITERIA
	1.3 Document the topology of the LAN 1.4 Obtain current and future network capacity predictions according to current and future business requirements from the appropriate person 1.5 Specify the number and type of switch required, with reference to future network requirements 1.6 Specify requirements for network management and security, as prescribed by organisational policy 1.7 Select the switch and switch operating system software version with appropriate features according to required specifications
2. Install and configure the network switch	2.1 Assemble, rack mount and connect switch and peripherals according to manufacturer's requirements 2.2 Connect user to access points using cable that meets appropriate standard 2.3 Establish a valid network connection with other network devices 2.4 Configure a network internet protocol (IP) address for the switch 2.5 Install or configure simple network management protocol (SNMP) agent software, on each switch, to collect network traffic data for the management information base (MIB) from that segment of the network and relay it to the management console 2.6 Install and configure SNMP management console software on a computer designated to be the network manager's main console, to collect network traffic data from the switch acting as agents 2.7 Manually configure user access ports of the switch for speed and full or half-duplex operation
3. Test the network switch and reconfigure the network	3.1 Test the switch and other network devices according to manufacturer's requirements and organisational guidelines 3.2 Test to ensure connectivity across the network 3.3 Modify the network to verify SNMP management software 3.4 Make adjustments to the network, depending on test and troubleshooting results
4. Complete documentation and clean worksite	4.1 Tabulate test results and complete all user reports 4.2 Complete report and notify client of network status 4.3 Clean up and restore worksite to client's satisfaction 4.4 Secure sign-off from appropriate person

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.6, 1.7, 2.1, 2.2, 3.1	• Organises, evaluates and critiques information from a range of policy, technical and instructional material
Writing	1.3, 4.1, 4.2	• Prepares clear and concise workplace documentation incorporating technical language to communicate complex information clearly and effectively
Oral Communication	1.2, 1.4, 4.2	• Uses active listening, observational and questioning techniques to identify different perspectives and confirm, clarify or revise understanding
Numeracy	2.7	• Uses mathematical formulas and calculations to take test measurements, interpret results and evaluate performance and interoperability of network
Navigate the world of work	1.1, 4.3	• Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to own work
Interact with others	4.2-4.4	• Selects and uses appropriate conventions and protocols when communicating with customers
Get the work done	1.5, 1.7, 2.1-2.4, 2.7, 3.1-3.4	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context for complex, high-impact activities with strategic implications • Selects and uses digital technologies and systems to achieve work goals and enhance work processes • Implements actions according to a predetermined plan, making adjustments if necessary and addressing unexpected issues • Uses analytical and lateral thinking techniques for identifying issues, generating and evaluating possible solutions

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status

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Code and title current version	Code and title previous version	Comments	Equivalence status
ICTTEN513 Install, configure and test a local area network switch	ICTTEN5200A Install, configure and test a local area network switch	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN513 Install, configure and test a local area network switch

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- plan and prepare for the local area network (LAN) switch installation task
- select a LAN switch to meet client business specifications
- install switches without the network losing connectivity or failing
- install and test switch that ensures interoperability within the network
- use a range of switch configurations
- apply solutions to a variety of switch-related problems
- report on status of completed installation
- seek sign-off from customer.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe advantages and disadvantages of switches over hubs
- identify and evaluate the impact of pertinent sections of the Australian Computer Society Code of Ethics in relation to network switches
- describe common network cable types and connectors
- summarise common network topologies
- explain differences between standard and intelligent (i.e. configurable) switches, and between switches and hubs
- outline the importance of client documentation prepared when installing networks
- explain how to provide the network with redundant paths for reliability and how routers and switches manage these paths.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- a site where switch installation can be conducted
- field measurement equipment currently used in industry
- relevant switch specifications, technical requirements for a network, switch, cabling, networked (LAN) computers, workstations, servers and a wide area network (WAN) service point of presence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN514 Install, configure and test a server

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to undertake work on a server as part of an upgrade to an existing network or during the implementation of a new network.

It applies to individuals, employed by telecommunications and information communications technology (ICT) networking provisioning companies, who carry out installation, maintenance and upgrade of ICT networks.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to install a server	1.1 Prepare for work in line with site-specific safety requirements and enterprise work health and safety (WHS) processes and procedures 1.2 Notify customer to arrange site access 1.3 Obtain server applications and features from appropriate personnel 1.4 Choose the most suitable server with reference to required server

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ELEMENT	PERFORMANCE CRITERIA
	application and server features 1.5 Choose the most suitable network operating system features with reference to required server solution and technical requirements 1.6 Provide alternative server solutions with reference to required server application and server features 1.7 Review required installation options 1.8 Analyse data migration requirements 1.9 Apply back-up and recovery requirements with reference to organisational policy 1.10 Analyse education and training requirements for support staff and in line with client requirements and relevant enterprise policies 1.11 Create and document a deployment plan 1.12 Advise user group of deployment and potential down times
2. Install and configure the server	2.1 Back up and restore local data in preparation for installation 2.2 Install and configure the server as required by technical requirements and functional specifications 2.3 Install and undertake configuration activities using relevant operating system and application upgrades 2.4 Reconnect and reconfigure relevant connectivity devices
3.Test server and reconfigure the network	3.1 Run system testing for benchmarking against client specification and requirements according to test plan, and record outcomes 3.2 Analyse the error report and make changes as required 3.3 Test required changes or additions 3.4 Validate changes or additions against specifications
4.Complete documentation and clean worksite	4.1 Make and document server configuration and operational changes 4.2 Tabulate test results and complete all documentation for users 4.3 Complete client report and notify of network status 4.4 Clean up and restore worksite to client’s satisfaction 4.5 Secure sign-off from appropriate person

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.8-1.10, 2.2, 3.1, 3.4	• Organises, evaluates and critiques information from a range of enterprise policies, technical and instructional material
Writing	1.11, 3.1, 4.1	• Prepares clear and concise workplace documentation incorporating technical language to communicate complex information clearly and effectively
Oral Communication	1.2, 1.3, 4.3	• Clearly articulates requirements using language appropriate to audience and environment • Uses active listening, observational and questioning techniques to identify different perspectives and confirm, clarify or revise understanding
Numeracy	3.1-3.3, 4.2	• Make test measurements, interpret results and evaluate performance and interoperability of network
Navigate the world of work	1.1, 1.9, 1.10, 4.4	• Takes personal responsibility for adherence to legal and regulatory responsibilities and organisational policies and protocols relevant to own work
Interact with others	1.12, 4.2, 4.3, 4.5	• Selects and uses appropriate conventions and protocols when communicating with stakeholders in a range of work contexts • Considers purpose and possible actions to be taken as a result of any work-related communication • Recognises importance of taking audience, purpose and contextual factors into account when making decisions about what to communicate with whom and why
Get the work done	1.1, 1.4-1.6, 1.9, 2.1-2.4, 3.1-3.4, 4.1	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context for complex, high-impact activities with strategic implications • Implements actions according to a predetermined plan, making adjustments if necessary and addressing unexpected issues • Selects and uses digital technologies and systems to achieve work goals and enhance work processes • Uses formal analytical and lateral thinking techniques for identifying issues, generating and evaluating possible solutions

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Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN514 Install, configure and test a server	ICTTEN5201A Install, configure and test a server	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN514 Install, configure and test a server

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- analyse server and network operational issues
- apply user applications and relate to user needs when configuring a server
- create technical and user documentation
- install and configure server
- test server and reconfigure network
- troubleshoot server and network failures.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe the Australian Computer Society Code of Ethics
- describe the following aspects of a common network:
  - cable types and connectors
  - topologies
- explain compatibility issues and resolution procedures
- summarise desktop applications and operating systems
- outline documentation requirements for networks
- describe typical enterprise communication and training systems for staff involved in deployment
- outline features of:
  - current network operating systems (NOS)
  - current server applications compatibility issues and resolution procedures
- outline implementation and configuration of servers

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- explain system back-up procedures.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- a site where server installation may be conducted
- relevant server specifications
- cabling
- networked local area network (LAN) computers
- server diagnostic software
- switch
- technical requirements for a network
- wide area network (WAN) service point of presence
- workstations
- relevant regulatory documentation impacting installation activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN515 Dimension and design a radio frequency identification system

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to carry out installation, maintenance and upgrade of information and communication technology (ICT) networks.

It applies to individuals employed by telecommunications and ICT networking provisioning companies specialising in radio frequency identification (RFID) technology. These individuals might work on upgrades to existing systems or be involved in implementation of new logistical or security networks using RFID technology according to design specifications.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to dimension and design an RFID system	1.1 Obtain the client's business requirements of the intended RFID system to effectively inform the new design 1.2 Research RFID technologies, their functionalities and different implementations of configurations 1.3 Select suitable software and hardware types to ensure the

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ELEMENT	PERFORMANCE CRITERIA
	proposed system is designed to meet business requirements 1.4 Conduct a survey of available interrogators or readers, tags and wireless units
2. Dimension and design RFID system	2.1 Select the most appropriate interrogators or readers for the given specification to ensure their compatibility with current network infrastructure, if applicable 2.2 Minimise interrogator to interrogator interference 2.3 Verify antenna geometry and footprint are consistent with the chosen design 2.4 Minimise sources of interference 2.5 Incorporate use of anti-collision protocols into the RFID design 2.6 Customise appropriate tag to client requirements 2.7 Predict performance for read distance, write distance and tag response time to confirm these conform with client requirements 2.8 Select optimal locations for an RFID tag to be placed on an item 2.9 Prepare a design proposal for the RFID system including specifications 2.10 Prepare a report containing design solutions and recommendations of preferred products, including justification for recommendations 2.11 Submit report to client for approval
3. Document specified design	3.1 Complete documentation according to client requirements 3.2 Inform client of standards applying to the design 3.3 Secure sign-off of RFID design from appropriate person

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.2	• Organises, evaluates and critiques technical documentation from a range of complex texts

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Writing	2.9, 2.10, 3.1	• Prepares clear and concise workplace documentation including reports and design solutions incorporating technical language to communicate complex information clearly and effectively
Oral Communication	1.1	• Uses active listening, observational and questioning techniques to identify different perspectives and confirm, clarify or revise understanding
Numeracy	1.2, 2.7, 2.9	• Uses mathematical formulae and geometric calculations to interpret and record technical specifications and evaluate possible design solutions
Interact with others	1.1, 2.11, 3.2, 3.3	• Selects appropriate communication protocols and conventions in a broad range of work contexts
Get the work done	1.3, 1.4, 2.1-2.6, 2.8	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context for complex, high-impact activities with strategic implications • Implements actions according to a predetermined plan, making adjustments if necessary and addressing unexpected issues • Selects and uses digital technologies and systems to achieve work goals and enhance work processes • Uses formal analytical and lateral thinking techniques for identifying issues, generating and evaluating possible solutions

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN515 Dimension and design a radio frequency identification system	ICTTEN5203A Dimension and design a radio frequency identification system	Updated to meet Standards for Training Packages Minor changes to performance criteria for	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
		clarity	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN515 Dimension and design a radio frequency identification system

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- adapt radio frequency identification (RFID) technologies to a specified plan and design
- evaluate RFID client specifications against accepted industry practices
- include RFID architecture across a secure environment
- integrate RFID information into business applications
- produce design information in configuring the network with internet protocol (IP) addressing
- produce information that can be shared between businesses
- make recommendations and offer optimum design solutions.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- summarise the business process design
- summarise the client's business operations, business function and organisation
- outline compatibility issues with existing system and resolution procedures
- explain configuration of IP networks
- describe desktop applications and operating systems as required
- explain the linkage between operational processes
- summarise network protocols and operating systems
- outline network topologies
- summarise radio spectrum and RFID frequencies
- explain radio frequency (RF) interference
- describe general characteristics of RFID architecture

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- provide a detailed summary of RFID hardware and software
- outline RFID technologies incorporating substantial depth in network operating systems, protocols, interrogators and sensors, wireless technologies and cabling standards
- demonstrate RFID product knowledge
- summarise security protocols, standards and data encryption.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- a suitable telecommunications site
- client's functional requirements
- RFID equipment specifications
- database software
- simulation software
- organisational guidelines
- network or computer layout documentation and premises plans.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN516 Produce technical solutions from business specifications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to compile and evaluate business specifications from a client and produce viable business solutions.

It applies to individuals who carry out network design and implementation of practical technical solutions of information and communication technology (ICT) networks. They are employed by telecommunications and information technology networking provisioning companies specialising in integrating converging and emerging technologies of ICT networks.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to produce technical solutions from business specifications	1.1 Obtain business requirements and business specifications for the client from appropriate person 1.2 Research and identify the client's business model 1.3 Determine technical specifications for the business 1.4 Clarify and confirm the business problem and key stakeholders'

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ELEMENT	PERFORMANCE CRITERIA
	requirements with stakeholders
2. Evaluate the impact of the technical requirements	2.1 Review and assess business problems, opportunities and objectives 2.2 Determine technical requirements in respect of input and output, interface, process flow or quality requirements 2.3 Analyse hardware, software and network requirements 2.4 Build business platform based on software solutions 2.5 Investigate processes to be changed by the business solution 2.6 Produce an evaluation document on the impact of the technical requirements on the business
3. Produce technical business solutions	3.1 Develop technical solutions in response to problems and business requirements 3.2 Determine costs involved to implement the technical business solution 3.3 Investigate a range of supplier products to determine which one best meets technical requirements 3.4 Produce a report on the technical solutions addressing the business specifications and recommendations against business requirements
4. Document and validate agreed solutions	4.1 Forward technical requirements and solution overview to appropriate person for feedback 4.2 Analyse feedback and incorporate change as required 4.3 Document changes and distribute to appropriate person 4.4 Obtain sign-off on final business solution

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.2, 2.1, 4.2	• Organises, evaluates and critiques workplace documentation from a range of complex texts

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Writing	1.5, 2.6, 3.4, 4.3	• Prepares clear and concise workplace documentation including reports and design solutions incorporating technical language to communicate complex information clearly and effectively
Oral communication	1.4	• Uses active listening, observational and questioning techniques to identify different perspectives and confirm, clarify or revise understanding
Numeracy	3.2	• Uses mathematical formulas and calculations to interpret business costs and evaluate possible technical design solutions
Interact with others	1.1, 1.2, 1.4, 1.5, 4.1, 4.3, 4.4	• Recognises and applies protocols governing what to communicate, with whom and how in context of own work • Selects appropriate communication protocols and conventions in a broad range of work contexts
Get the work done	1.3, 2.1-2.5, 3.1, 3.3	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context for complex, high-impact activities with strategic implications • Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world and uses these to understand uses and potential of technology • Implements actions according to a predetermined plan, making adjustments if necessary and addressing unexpected issues • Considers strategic and operational potential of digital trends to achieve work goals, enhance work processes and enhance solutions • Uses formal, analytical and lateral thinking techniques for identifying issues, generating and evaluating possible solutions

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN516 Produce technical solutions from	ICTTEN5204A Produce technical solutions from	Updated to meet Standards for Training	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
business specifications	business specifications	Packages.	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN516 Produce technical solutions from business specifications

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- adapt technologies for required technical solutions
- use site design software and hardware
- evaluate client specifications against accepted industry practices
- develop technical solutions from business specifications
- document information that can be shared between businesses
- apply design concepts to business solutions
- document technical reports
- make recommendations and offer optimum design solutions.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain the client business domain, business function and organisation
- explain compatibility issues and resolution procedures
- outline configuration of internet protocol (IP) networks
- describe common desktop applications and operating systems
- explain how to document technical specifications
- summarise security protocols, standards and data encryption
- explain the role of the following technologies in business systems:
  - network topologies
  - network protocols and operating systems
  - radio frequency (RF) networks
  - optical networks

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- mobile cellular networks
- core networks
- access networks
- radio frequency identification.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- client functional requirements
- business specifications
- database software
- simulation software
- organisational guidelines
- network and computer layouts
- site design software and hardware
- information on a range of ICT business solutions.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN517 Plan a wireless mesh network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to design a scalable wireless access network using mesh technology for growing communities to provide users with secure wireless roaming beyond traditional wireless local area network (LAN) boundaries, and which are readily deployed in areas that lack wired backhaul.

It applies to individuals who have proficient technical skills such as planning and field officers from private and public organisations who undertake work on wireless networking or radio communications equipment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Research wireless mesh networks and formulate the system architecture	1.1 Confirm, with regulatory spectrum management authority, the specific regulations regarding radio characteristics 1.2 Contact customer to determine wireless mesh network design specifications 1.3 Evaluate the use of frequency bands for operation of the wireless

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ELEMENT	PERFORMANCE CRITERIA
	mesh networks (WMN) 1.4 Evaluate and select wireless technology, internet protocol (IP) version and mesh routing protocol to satisfy design criteria 1.5 Specify and source hardware and software requirements
2. Prepare a detailed plan for the mesh network	2.1 Evaluate the maximum line of sight distances achievable between backbone nodes and between mesh nodes 2.2 Plan sites where mesh nodes will be located and plot to scale on a map 2.3 Estimate quantity and length of the links required between mesh nodes to ensure design is within specifications 2.4 Design backbone links in mesh topology for scalability of future deployments 2.5 Select location of the internet gateway for the network 2.6 Allocate operating frequencies at mesh nodes, backbone nodes and wireless access points for optimum network performance with minimal interference from adjacent network routers
3. Plan IP addresses and subnet mask	3.1 Produce an addressing scheme and allocate IP addresses and subnet mask to mesh nodes, backbone nodes and access points 3.2 Produce a configuration scheme to secure network
4. Document the mesh network	4.1 Document plans and drawings for the mesh network 4.2 Produce an installation plan for building the mesh network 4.3 Following installation, configuration and testing of the mesh network, incorporate 'as built' amendments, if appropriate

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.3, 1.4, 2.1, 4.1	• Critically analyses plans and other documentation from a variety of sources, and consolidates information to evaluate requirements
Writing	1.5, 3.2, 4.1, 4.2	• Prepares clear and concise workplace documentation

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		including reports and design solutions incorporating technical language to communicate complex information clearly and effectively
Numeracy	2.1-2.4	• Performs calculations, interprets results and evaluates different types of technical data for design solutions
Oral Communication	1.1, 1.2	• Uses active listening, observational and questioning techniques to identify different perspectives and confirm, clarify or revise understanding
Interact with others	1.1, 1.2	• Recognises and applies protocols governing what to communicate, with whom and how, in own work context
Get the work done	1.3-1.5, 2.1, 2.2, 2.4-2.6, 3.1, 4.3	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context for complex, high-impact activities with strategic implications • Selects and uses digital technologies and systems to achieve work goals and enhance work processes • Implements actions according to a predetermined plan, making adjustments if necessary and addressing unexpected issues • May use formal, analytical and lateral thinking techniques for identifying issues, generating and evaluating possible solutions

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN517 Plan a wireless mesh network	ICTTEN5217A Plan a wireless mesh network	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN517 Plan a wireless mesh network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- evaluate and select wireless technology and mesh routing protocol
- plan a wireless mesh network from a project brief
- produce an internet protocol (IP) addressing scheme
- prepare an installation plan.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- evaluate antenna gain and polarisation
- outline cable loss
- conduct calculations for effective isotropic radiated power (EIRP)
- calculate line of site radio range
- explain decibels and related units
- summarise IP addressing and subnet masks
- explain network security and firewalls
- outline a range of network topologies
- summarise radio frequency (RF) bands
- explain routing protocols
- clarify transmission control protocol (TCP)-IP protocols
- explain wireless networking hardware, access points, wireless routers and gateway
- explain wireless protocols.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- sites where planning a wireless mesh network may be conducted
- design criteria and other site-related documentation
- equipment specifications and technical documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN601 Undertake qualification testing of new or enhanced equipment and systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to inspect and test international telecommunications network equipment not previously installed in an Australian network. It involves assessing its suitability and compliance with local regulations and conditions for the carrier or asset owner.

It applies to individuals working as field officers, technicians or technical supervisors for carriers, contractors or other service providers, who verify compliance of new equipment or systems with Australian standards.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Ensure conformity of international design to Australian standards	1.1 Assess original international design to verify compliance with relevant Australian legislation, codes, regulations and standards 1.2 Reconfigure international design in consultation with customer 1.3 Rewrite design specifications to include configuration

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ELEMENT	PERFORMANCE CRITERIA
	amendments
2. Plan and establish test regime	2.1 Plan type and number of tests to ensure full trial of new or enhanced design and greatest coverage for minimal tests 2.2 Plan and establish test environment to ensure total validity of chosen tests 2.3 Design test regime of proposed system to test impact on existing systems 2.4 Confirm test regime in consultation with planners and verify test equipment meets required standards
3. Undertake tests	3.1 Conduct and document tests including live system tests in logical and sequential order to planned test regime 3.2 Negotiate problems experienced during tests with system experts or designers to plan contingency activity according to enterprise policy 3.3 Prepare and submit trouble reports according to enterprise policy
4. Analyse test results	4.1 Analyse test results against design specifications and planned outcomes 4.2 Prepare a report referring major deficiencies to designers with recommendations for design change 4.3 Analyse minor variances, plan solutions and document changes to specifications
5. Retest design changes	5.1 Implement design and specification changes and conduct further tests as required 5.2 Analyse test results to verify compliance with updated design specifications 5.3 Document results of tests according to enterprise policy

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description

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Reading	1.1, 3.2, 3.3, 4.1, 5.3	• Organises, evaluates and critiques technical specifications, legislative, regulatory and policy requirements
Writing	1.3, 3.1, 3.3, 4.2, 4.3, 5.3	• Prepares clear and concise workplace documentation including reports incorporating technical language to communicate recommendations clearly and effectively
Oral Communication	1.2, 2.4	• Uses active listening, observational and questioning techniques to identify different perspectives and confirm, clarify or revise understanding
Numeracy	4.1, 5.2	• Uses mathematical formulae to make calculations and necessary calibration changes by interpreting test results
Navigate the world of work	1.1, 3.2, 3.3, 5.3	• Adheres to organisational procedures and protocols and legal and regulatory responsibilities, and considers these when planning and undertaking work
Interact with others	2.4, 3.2	• Collaborates with others to achieve joint outcomes, playing an active role in negotiating positive outcomes • Selects and uses appropriate conventions and protocols when communicating with personnel in a range of work contexts
Get the work done	2.1-2.3, 3.1, 3.2, 4.3, 5.1	• Takes responsibility for own workload, negotiating some key aspects with others • Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context for complex, high impact activities with strategic implications • Uses sophisticated understanding of principles, concepts, language and practices associated with the digital world to identify uses and potential of new technologies • Implements actions according to a predetermined plan, making adjustments if necessary • Uses formal, analytical and lateral thinking techniques for identifying issues, and generating and evaluating possible solutions

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN601	ICTTEN6036A	Updated to meet	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
Undertake qualification testing of new or enhanced equipment and systems	Undertake qualification testing of new or enhanced equipment and systems	Standards for Training Packages.	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN601 Undertake qualification testing of new or enhanced equipment and systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- apply Australian standards to international designs
- identify customer's specific requirements
- configure and set up test regimes
- identify and conduct tests, including live system tests, and interpret and analyse results
- approach problem diagnosis systematically, eliminating causes
- re-test design changes
- prepare report, including deficiencies, analysis and recommendations.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain the Australian standards applicable to system and equipment compliance
- outline necessary connections to carrier infrastructure or equipment
- evaluate the system design requiring testing
- explain network and equipment tests required for compliance
- outline common network architectures
- explain relevant international standards.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

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- a test site where qualification testing of equipment and systems may be conducted
- equipment currently used in industry
- relevant Australian and international standards, codes, design specifications, manuals and reference materials.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN602 Undertake system administration

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to maintain the integrity of network support systems and software, for both system platforms and applications of computer systems, including local area networks (LAN) and wide area networks (WAN).

It applies to individuals, working as system administration support officers for service providers and large organisations, who manage and administer networks and make recommendations for improved customer support.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Undertake proactive maintenance of system	1.1 Prepare methodology to undertake platform database optimisation and administration effectively 1.2 Produce a cost-benefit analysis of database optimisation schedule to evaluate the effective return on investment (RoI) benefit to the organisation 1.3 Produce training instructions for new users on methodology to

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ELEMENT	PERFORMANCE CRITERIA
	ensure effective database optimisation and administration 1.4 Interrogate and monitor system platforms to determine error logs, aging time on processes, database checks and system loadings 1.5 Notify appropriate personnel of problems and provide advice and guidance on likely solutions 1.6 Conduct system measurements from a user perspective on response times, and initiate investigations on problems where specifications are not being met 1.7 Assess availability of data storage space and initiate appropriate action where required 1.8 Develop procedures for system backup and restoration, review for efficiency of operation and amend where required
2. Provide application support to system users	2.1 Produce a set of procedures for formal meetings with users on a regular basis for effectiveness to discuss user issues and provide support 2.2 Set up a user support network to provide responsive system administration to users on an ongoing basis as critical issues arise
3. Create and delete user accounts	3.1 Create a hierarchical user profiling system to manage user accounts effectively according to enterprise policy 3.2 Establish and monitor security procedures relating to access according to policy 3.3 Assess grounds for deletion of user accounts and determine necessary action
4. Undertake special investigations	4.1 Evaluate requests for investigation to determine detail of action required 4.2 Prepare activity plan including timelines, specific goals, investigative team and resources required to conduct an investigation 4.3 Conduct investigation methodically according to plan and record findings 4.4 Analyse findings and prepare and forward reports, including recommendations to the requesting body

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

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Skill	Performance Criteria	Description
Reading	3.1, 3.2, 4.4	• Organises, evaluates and interprets technical specifications and related documentation from a range of complex texts
Writing	1.2, 1.3, 1.8, 2.1, 4.2-4.4	• Prepares clear and concise workplace documentation including training instructions • Produces reports on system administration and investigations, incorporating technical language, to communicate complex information clearly and effectively
Oral Communication	1.5	• Provides verbal instructions and guidance using specific and relevant language suitable to audience • Employs listening and questioning techniques to confirm understanding
Numeracy	1.2, 1.6	• Uses mathematical formulae to make statistical calculations about traffic predictions • Uses mathematical formulae to complete cost-benefit analysis
Get the work done	1.1, 1.4-1.7, 2.2, 3.1-3.3, 4.1-4.3	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context for complex, high-impact activities with strategic implications • Considers the strategic and operational potential of digital technologies to achieve work goals, enhance work processes and enhance solutions • Uses digital systems and tools to enter, store and monitor data • Recognises and addresses some unfamiliar problems of increasing complexity within own scope • Uses formal processes to monitor implementation of solutions and reflect on outcomes

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTTEN602 Undertake	ICTTEN6042A Undertake	Updated to meet	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
system administration	system administration	Standards for Training Packages.	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN602 Undertake system administration

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- prepare a methodology for system maintenance
- produce cost-benefit analysis and training for database optimisation and administration
- review development of training instructions
- conduct system measurements
- develop support processes for system users
- manage user accounts and security procedures
- investigate potential system administration problems and make recommendations.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- summarise back-up systems
- demonstrate a deep knowledge of computer systems
- outline meeting procedures
- outline the common methodology for system administration
- summarise optimisation and administration of a database
- provide a summary of telecommunications monitoring tools
- explain the process for investigation requests and actions
- outline user account security and profiling system.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- a network for maintenance and analysis of special investigations
- equipment and systems manuals, specifications and enterprise policy.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN603 Undertake network traffic management

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to monitor, analyse and improve network performance for the purpose of effectively managing traffic flow in telecommunications networks.

It applies to individuals working as field officers, technicians or technical supervisors for carriers, contractors or other service providers, who manage network traffic and make recommendations for capacity planning switching and transmission networks.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Evaluate network capacity and traffic problems	1.1 Interrogate network alarms to identify areas of route and circuit unavailability 1.2 Assess planned and unplanned outages to determine network unavailability and verify restoration times 1.3 Interrogate system to identify traffic status using network management system

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Analyse system alert to identify real and potential traffic problems 1.5 Analyse customer complaints and traffic measurement data to identify network problems 1.6 Activate and deactivate semi-permanent controls active in the network on a regular basis to simulate irregular traffic
2. Develop strategies to overcome network traffic problems	2.1 Conduct traffic measurements across all identified routes 2.2 Analyse results including historical data to make assessment of traffic volume requirements 2.3 Determine specific thresholds, loading and grading levels to alter traffic flows 2.4 Liaise with personnel to determine amendments to plan, based on funding parameters and budgeted levels 2.5 Develop strategies, based on traffic analysis and patterns, to control traffic and prevent congestion or other traffic problems 2.6 Develop strategies for recovery where traffic congestion occurs 2.7 Develop contingency plans to allow for problems during network changes
3. Apply short and long term solutions	3.1 Implement software changes according to planned strategy 3.2 Develop short-term ad hoc solutions where only a temporary solution is required 3.3 Ensure reversal action can be initiated in cases of temporary solutions 3.4 Implement contingency plan where required 3.5 Undertake monitoring of changes and take measurements to assess outcomes of variations 3.6 Prepare a report based on analysis of measurements for appropriate personnel with recommendations for further changes or actions 3.7 Review and monitor strategies regularly and initiate corrective action where required
4. Detect and take action on potential traffic congestion	4.1 Measure and analyse traffic loads to assess potential congestion problems and determine possible impact 4.2 Control traffic flow to prevent processor overloads 4.3 Evaluate potential traffic increases for impact on the network and develop contingencies to control traffic flow if required

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ELEMENT	PERFORMANCE CRITERIA
5. Provide traffic indicators for capacity planning	5.1 Predict future potential traffic trends and requirements using data on current and historical traffic patterns 5.2 Identify potential network traffic problems and make recommendations to network planners 5.3 Complete reports with recommendations and forward to enterprise planners and account managers

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.5, 2.2, 5.1	• Organises, evaluates and interprets technical specifications and related documentation from a range of complex texts
Writing	2.5-2.7, 3.6, 5.3	• Prepares clear and concise workplace documentation, including reports and recommendations incorporating technical language, to communicate complex information clearly and effectively
Oral Communication	2.4	• Participates in verbal exchanges using specific and relevant language suitable to audience • Employs listening and questioning techniques to confirm understanding
Numeracy	1.5, 2.1-2.4, 3.5, 4.1, 5.1	• Uses mathematical formulas to interpret data and make projections about traffic flow • Uses mathematical formulae to estimate and plan project costs within business budgets
Interact with others	2.4, 5.2, 5.3	• Collaborates with others to achieve joint outcomes • Selects and uses appropriate conventions and protocols when communicating with personnel in a range of work contexts
Get the work done	1.1-1.4, 1.6, 2.5-2.7, 3.1-3.4, 3.7, 4.2, 4.3	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context for complex, high-impact activities with strategic implications • Approaches problem-solving in diverse ways, recognising that there is no single formula that applies

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		in all situations • Uses formal processes to monitor implementation of solutions and reflect on outcomes • Uses digital systems and tools to enter, store and analyse data

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN603 Undertake network traffic management	ICTTEN6043A Undertake network traffic management	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN603 Undertake network traffic management

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- implement a contingency plan
- conduct traffic measurements
- develop contingencies to control traffic flow
- identify potential network traffic problems and make recommendations
- provide information for capacity planning.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain customer policies and service level agreements
- outline network management planning principles
- summarise traffic blocking, congestion and dimensioning principles
- explain traffic engineering
- summarise traffic patterns
- outline transmission type and signals that may be encountered
- clarify typical network topologies, switching, routing and transmission techniques
- summarise various network management systems suitable for conducting traffic evaluations.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- a network and equipment for traffic monitoring and management
- equipment and systems manuals, specifications and enterprise policy.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN604 Coordinate fault rectification and restoration of service following network outages

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to identify, analyse and resolve service faults by coordinating fault rectification. It describes strategies for dealing with customers, operational staff and associated system restoration.

It applies to individuals who have high-level technical skills and appropriate authority to coordinate activities of maintenance personnel and oversee compliance issues associated with service level agreements.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for restoration of client services	1.1 Evaluate relevant data to determine the nature of the fault and extent of the outage 1.2 Assess impact of the fault on network and clients, and establish priority of actions to be taken 1.3 Analyse alarm and other network data and record details

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ELEMENT	PERFORMANCE CRITERIA
	according to contractual agreements and enterprise policy 1.4 Prepare an action plan to manage fault rectification and restoration to minimise impact on the network and affected customer 1.5 Provide a central point for all rectification and restoration activity and information, to coordinate action and progress 1.6 Prioritise service restoration based on assessment of contractual arrangements, including service level agreements with clients 1.7 Negotiate with client's account manager regarding repair arrangements where service level agreements cannot be met
2. Implement action plan for fault rectification and service restoration	2.1 Notify all relevant personnel and departments involved in the outage, according to enterprise policy 2.2 Isolate affected alarms and monitor all associated alarms to confirm no additional problems occur 2.3 Locate and rectify fault, following action plan backed up by contingency plan according to enterprise policy 2.4 Manage repair activity with appropriate technical support and adjust resource allocations or escalate if required to ensure effective restoration of network services within a specified timeline 2.5 Reset alarms and restore services to normal network configuration 2.6 Test and monitor network activity on recovery to certify effective fault clearance and service restoration
3. Finalise administrative tasks	3.1 Complete administrative tasks according to enterprise instructions 3.2 Notify customers of fault rectification and service restoration according to service level agreement

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.3, 1.6, 2.1, 2.3, 3.1, 3.2	• Organises, evaluates and interprets technical readings, instructional material and workplace documentation from

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		a range of complex texts
Writing	1.3, 1.4, 3.1	• Prepares clear and concise workplace documentation, including reports and recommendations, incorporating technical language to communicate complex information clearly and effectively
Numeracy	1.1, 1.3	• Analyses and synthesises highly embedded mathematical information
Interact with others	1.7, 2.4	• Demonstrates understanding of what to communicate, with whom and how, in a broad range of work contexts • Collaborates and cooperates with others to achieve joint outcomes
Get the work done	1.2, 1.4-1.6, 2.2-2.6	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context for complex, high-impact activities with strategic implications • Uses digital systems and tools to enter, store and monitor data, and for communication purposes • Uses formal, analytical and lateral thinking techniques for identifying issues, generating and evaluating possible solutions • Uses formal processes to monitor implementation of solutions and reflect on outcomes

Unit Mapping Information

Code and title **current version**	**Code and title** **previous version**	**Comments**	**Equivalence status**
ICTTEN604 Coordinate fault rectification and restoration of service following network outages	ICTTEN6044A Coordinate fault rectification and restoration of service following network outages	Updated to meet Standards for Training Packages.	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN604 Coordinate fault rectification and restoration of service following network outages

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- prepare an action plan to manage fault rectification and service restoration
- coordinate implementation of action plan and manage repair activities
- apply escalation procedures
- finalise the administrative and notification processes.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline alarm conditions and areas of the network or service they impact
- clarify connections to carrier infrastructure or equipment
- summarise customer care and service level agreements and policies
- outline electrical and optical principles underpinning telecommunications
- summarise escalation procedures and list appropriate tier level contacts
- summarise legislation and licensing requirements surrounding installation of telecommunications equipment
- describe network and transmission equipment faults
- outline work health and safety (WHS) requirements and work practices relevant to fault rectification
- explain power requirements and electrical safety
- outline protection switching
- list telecommunications applications and related equipment
- provide a detailed list of relevant test equipment
- outline transmission hierarchy and switching principles

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- summarise typical performance parameters and faults that may be encountered.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- sites where fault rectification and restoration of service may be conducted
- testing equipment currently used in industry
- manufacturer's and enterprise documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN605 Implement planned network changes with minimal impact to the customer

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to effectively upgrade network equipment, increase network capacity, install new network elements and change existing network elements. It involves control of planned routine maintenance activities on the network.

It applies to individuals with high-level technical skills, working for service providers, asset owners and contractors, who coordinate activities of maintenance personnel and address compliance issues associated with service level agreements.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for network changes plan	1.1 Obtain relevant legislation, codes, regulations and standards for compliance when conducting work 1.2 Evaluate work order with relevant personnel and identify likely effects, on the network and impact on customers, of the planned

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ELEMENT	PERFORMANCE CRITERIA
	changes 1.3 Develop network engineering strategies including management of outages with involvement of the network operations centre (NOC) 1.4 Prepare and produce a network changes plan for approval according to enterprise practice
2. Implement and test network changes prior to customer utilisation	2.1 Implement network changes according to network engineering strategies following work health and safety (WHS) and environmental requirements with minimal impact to customer traffic 2.2 Conduct integration testing of newly installed equipment to ensure interoperability with existing equipment and network 2.3 Conduct performance test to assess network changes as stated in manufacturer's specifications and enterprise acceptance testing procedures 2.4 Analyse test results and rectify problems or escalate according to enterprise procedures 2.5 Initiate quality assurance procedures to ensure confidence in quality of processes according to enterprise policy 2.6 Prepare reports for the appropriate area within the enterprise
3. Enable functionality of network changes to customer	3.1 Monitor network stability prior to connecting customer traffic and take action to rectify any problems 3.2 Enable full functionality of network changes to customer according to the network changes plan, and monitor network to ensure continued stability 3.3 Prepare appropriate documentation according to enterprise requirements
4. Assess and report on implementation of network changes	4.1 Use monitoring data to evaluate performance of the network changes and impact to customers according to network engineering strategies and customer requirements 4.2 Document implementation of planned network changes and recommend any further improvements as part of the enterprise's quality assurance system

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

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Skill	Performance Criteria	Description
Reading	1.1, 2.3-2.5, 3.2, 3.3, 4.1	• Organises, evaluates and interprets equipment and system manuals and specifications, and relevant enterprise policy and documentation
Writing	1.4, 2.6, 3.3, 4.2	• Prepares clear and concise workplace documentation including reports and recommendations incorporating technical language to communicate complex information clearly and effectively
Oral Communication	1.2	• Uses active listening, observational and questioning techniques to identify different perspectives and confirm, clarify or revise understanding
Navigate the world of work	2.1, 2.5, 4.2	• Considers and adheres to organisational procedures and protocols and legal and regulatory responsibilities when planning and undertaking work • Seeks to improve policies and procedures to better meet organisational goals
Get the work done	1.1-1.3, 2.2-2.5, 3.1, 3.2, 4.1	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context for complex, high-impact activities with strategic implications • Uses digital systems and tools to enter, store and analyse data • Considers strategic and operational potential of digital trends to achieve work goals, and enhance work processes and solutions • May use formal, analytical and lateral thinking techniques for identifying issues, generating and evaluating possible solutions and escalating issues to others when appropriate

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTTEN605 Implement planned network	ICTTEN6045A Implement planned network	Updated to meet Standards for Training	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
changes with minimal impact to the customer	changes with minimal impact to the customer	Packages.	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN605 Implement planned network changes with minimal impact to the customer

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- evaluate planned network changes, including impact on customer
- develop network engineering strategies to manage outages
- implement network changes
- conduct integration testing, analyse results and rectify faults
- enable full functionality of network changes.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline compatibility and interoperability of system types
- explain factors affecting network stability
- identify and describe the function of network hardware
- summarise internet protocol (IP) based networks
- outline legislation and licensing requirements relevant to work activity
- provide a detailed summary of optical networks
- explain quality assurance procedures
- identify and describe the function of network software
- evaluate the test equipment suitable for tests to be made, and describe calibration procedures
- outline types of customer networks.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- sites where network changes may be conducted
- testing equipment currently used in industry
- systems manuals, specifications and enterprise policy.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN606 Manage a common channel signalling network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to combine technical and organisational assistance to provide signalling facilities to interconnect telecommunications over trunked networks.

It applies to individuals who may be responsible for small projects or parts of larger projects to provide a reliable service to customers and who work as technical officers or engineers for private and public organisations.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Analyse signalling and digital path alarms and clear network faults	1.1 Obtain relevant legislation, codes, regulations and standards to prepare for the task 1.2 Activate alarm management system to produce a trouble report and verify common channel signalling (CCS) and data faults or problems 1.3 Investigate cause of alarm and analyse results to determine

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ELEMENT	PERFORMANCE CRITERIA
	appropriate repair action and allocate resources 1.4 Monitor repair and restoration procedures to ensure commitment to specified timelines and initiate escalation procedures as appropriate and according to enterprise procedures 1.5 Reset alarms on completion of repair and monitor subsequent alarms to ensure no re-occurrence of the problem
2. Monitor integrity of data received on equipment ports	2.1 Activate alarm screens and monitor port times on a regular basis to ensure procedures are running 2.2 Clear port blockage and problems on completion of planned works and log in appropriate database 2.3 Monitor repair and restoration procedures to ensure commitment to specified timelines and initiate escalation procedures as appropriate and according to enterprise procedures
3. Monitor and acceptance test repair	3.1 Verify network stabilisation throughout repair and monitor repair action to ensure minimal impact on the overall network 3.2 Undertake acceptance testing according to prescribed operating procedures 3.3 Monitor network stability on completion and refer problems to appropriate area for action 3.4 Block alarms for out-of-service circuits
4. Coordinate CCS relationships	4.1 Log requests for relationship change and follow up problems with appropriate support staff 4.2 Monitor network stability and manage loading of data until the process is completed 4.3 Update models and enterprise systems
5. Coordinate CCS rearrangements	5.1 Log requests for rearrangement scenarios and verify feasibility of the rearrangement 5.2 Enter details of rearrangement in appropriate system and update system records 5.3 Monitor completed work for accuracy and network stability on completion 5.4 Produce a copy of documentation for future reference

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.2, 1.4, 2.3, 3.2	• Organises, evaluates and interprets information from equipment and system manuals, specifications and relevant enterprise documentation
Writing	2.2, 4.1, 5.1, 5.2	• Prepares clear and concise workplace documentation, including reports and recommendations, incorporating technical language to communicate complex information clearly and effectively
Numeracy	1.2, 1.3	• Extracts and evaluates mathematical data embedded in a range of technical information
Navigate the world of work	1.5, 2.3	• Considers and adheres to organisational procedures and protocols and legal and regulatory responsibilities when planning and undertaking work
Interact with others	3.3, 4.1	• Selects and uses appropriate conventions and protocols when communicating with personnel in a range of work contexts
Get the work done	1.1-1.5, 2.1, 2.2, 3.1-3.4, 4.2, 4.3, 5.3, 5.4	• Sequences and schedules complex activities, monitors implementation and manages relevant communication • Uses analytical processes to decide on a course of action, establishing criteria for deciding between options and seeking input and advice from others, if necessary • Uses formal processes to monitor implementation of solutions and reflect on outcomes • Uses digital systems and tools to enter, store and analyse data

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTTEN606 Manage a common	ICTTEN6047A Manage a common	Updated to meet Standards	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
channel signalling network	channel signalling network	for Training Packages.	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN606 Manage a common channel signalling network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- identify and implement repair action within service assurance guidelines
- analyse and interpret alarms including common channel signalling (CCS) and digital path
- apply enterprise fault management priorities and escalation procedures
- resolve problems in a methodical and logical manner
- conduct appropriate tests and interpret results.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain acceptance tests
- summarise alarm set-ups
- explain principles of the following aspects of common channel signalling (CCS):
  - architecture
  - protocols
  - signalling
  - testing
- describe CCS data and signalling pathways
- explain repair and restoration procedures
- outline switching network equipment operation.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- a site with CCS network
- tests and equipment currently used in industry
- relevant legislation, codes, regulations and standards.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN607 Analyse and organise repair of highly complex telecommunications network faults

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to identify faults across all network types, with collaboration from the network operations centre (NOC), and resolve any problems.

It applies to individuals working as network engineers, telecommunications officers, installers, maintenance staff and manufacturers or equipment specialists. It also applies to NOC staff in advisory roles and technical rectification roles.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Research fault background	1.1 Analyse current, relevant data and previous actions taken by other personnel 1.2 Research areas of similarity to network fault 1.3 Develop commercial and technical strategies with equipment vendor and NOC for diagnosing the fault

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Address and discuss all work health and safety (WHS) issues with relevant personnel 1.5 Obtain appropriate clearance and access to network equipment, software and firmware codes where they apply
2. Diagnose fault	2.1 Apply a methodical approach to isolate and diagnose the problem 2.2 Simulate fault in a workshop or laboratory environment if possible 2.3 Seek support from the vendor while investigation progresses 2.4 Instruct on-site technical staff to run appropriate tests and analyse results 2.5 Diagnose network fault using established methodical strategies in a timely fashion without undue disruption to other services 2.6 Develop a plan to rectify the fault
3. Organise fault rectification	3.1 Recommend fault rectification plan to the NOC, including any outages, seek approval and adjust plans accordingly 3.2 Instruct on-site repairers with clear and methodical instructions on how to proceed in rectifying the fault 3.3 Organise replacement or repair of faulty equipment with appropriate advice from vendors and manufacturers 3.4 Reconfigure replaced or repaired equipment and test rectified fault to ensure required performance 3.5 Notify NOC, affected customers and on-site staff of fault rectification
4. Report and document fault details and rectification	4.1 Notify vendors of repair details and recommend changes to equipment design where appropriate 4.2 Conduct cause and effect studies and forward results to the appropriate area for necessary action 4.3 Complete all administrative tasks and prepare a report including deficiencies, analysis and recommendations

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

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Skill	Performance Criteria	Description
Reading	1.1, 1.2	• Organises, evaluates and interprets technical specifications and standards from a range of complex texts
Writing	2.6, 3.1, 4.2, 4.3	• Prepares clear and concise workplace documentation, including training instructions and reports, incorporating technical language to communicate complex information clearly and effectively
Oral Communication	2.3, 2.4, 3.1, 3.2, 3.5, 4.1	• Clearly articulates requirements using language, tone and pace appropriate to audience and environment • Uses active listening, observational and questioning techniques to identify different perspectives and confirm, clarify or revise understanding
Numeracy	1.1	• Extracts and evaluates technical data, including equipment specifications
Interact with others	1.3, 2.3, 3.5, 4.1, 4.2	• Selects and uses appropriate conventions and protocols when communicating with customers, vendors or technical personnel in a range of work contexts
Get the work done	1.3, 1.4, 2.1, 2.2, 2.5, 3.3, 3.4	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context for complex, high-impact activities with strategic implications • Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world and uses these to troubleshoot and diagnose issues • Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information and identifying and evaluating options against agreed criteria • Uses formal, analytical and lateral thinking techniques for diagnosing issues, generating and evaluating possible solutions and escalating issues to others when appropriate

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status

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Code and title current version	Code and title previous version	Comments	Equivalence status
ICTTEN607 Analyse and organise repair of highly complex telecommunications network faults	ICTTEN6091A Analyse and organise repair of highly complex telecommunications network faults	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN607 Analyse and organise repair of highly complex telecommunications network faults

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- diagnose network faults using established methodical strategies without undue disruption to other services
- recommend fault rectification plan to the network operations centre (NOC)
- instruct on-site repairers
- facilitate replacement or repair of faulty equipment with appropriate advice from vendors and manufacturers
- facilitate final testing of rectified faults to ensure required performance
- prepare report including deficiencies, analysis and recommendations.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- summarise fault escalation procedures
- explain fault-finding techniques and use of test equipment
- outline fault types and rectification
- outline the operation of integrated packet optical transport networks (P-OTNs)
- explain the use of International Telecommunication Union (ITU) ITU-T G.709 standard
- explain network protocols
- outline safety requirements and standards
- explain service agreements
- explain synchronous digital hierarchy (SDH)
- summarise transmission control protocol (TCP)-internet protocol (IP)
- summarise the following types of networks and equipment:

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- access
- broadband deployment
- cabling
- customer premises' equipment (CPE)
- IP networks for enterprise and customer systems and installations
- local area networks (LAN)
- telephony
- wide area networks (WAN).

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- a site where highly complex network faults may be demonstrated and analysed without jeopardising live traffic
- equipment currently used in industry
- design specifications and manufacturer's manuals and reference materials.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN608 Verify new software and hardware releases

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to authenticate compliance and compatibility of software and hardware to an existing system for new software and hardware releases for an existing system or new infrastructure for convergence to Next Generation Networks (NGN).

It applies to individuals with high-level technical skills who make use of software test routines and test hardware for performance to manufacturer's and design specifications.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan testing of new software releases	1.1 Obtain manuals, specifications and instructions associated with new releases and identify areas of uncertainty for confirmation with the vendor 1.2 Plan the testing environment of the software release and likely impact with network management centre 1.3 Determine resources required to assist with the test, and

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ELEMENT	PERFORMANCE CRITERIA
	negotiate their availability 1.4 Determine and plan outage and notify network management centre as required 1.5 Notify customers of impact on the network during the test 1.6 Develop contingency plans to cater for likely problems during the test, including health and safety issues
2. Test software and hardware units	2.1 Load new software and conduct tests using appropriate test equipment according to vendor specifications 2.2 Evaluate test results to assess functionality and features of software and hardware according to vendor documentation 2.3 Test compatibility with existing network and take corrective action with vendor as required 2.4 Implement contingency plans in conjunction with network management if integrity of the network is compromised by the new release
3. Undertake administrative work	3.1 Document test results and store according to enterprise policy 3.2 Discuss ongoing or likely problems with the vendor and initiate follow-up arrangements to ensure a permanent solution 3.3 Provide clearance for software and hardware release to be put in service in the system, according to enterprise procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 2.1, 2.2, 3.1, 3.3	• Organises, evaluates and interprets technical documentation including software and hardware manuals, specifications and relevant enterprise policy and documentation
Writing	1.4-1.6, 3.1, 3.3	• Prepares clear and concise workplace documentation, including reports and recommendations, incorporating technical language to communicate complex information clearly and effectively

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Oral Communication	1.3-1.5, 3.2	• Clearly articulates requirements and likely challenges when engaging with enterprise personnel, customers and contractors using relevant language suitable to diverse audiences and employs listening and questioning techniques to confirm understanding
Numeracy	2.2	• Extracts and evaluates technical data, including equipment specifications during testing phase
Navigate the world of work	3.1, 3.3	• Adheres to organisational procedures and protocols when planning and undertaking work
Interact with others	1.1, 1.2, 1.5, 3.2	• Selects and uses appropriate conventions and protocols when communicating with customers, vendors or technical personnel in a range of work contexts • Collaborates and cooperates with others to achieve joint outcomes
Get the work done	1.1-1.4, 2.1, 2.3, 2.4	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context for complex, high-impact activities with strategic implications • Uses advanced features of digital systems and tools to enter, store, test and analyse data • Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information and identifying and evaluating options against agreed criteria • Uses formal, analytical and lateral thinking techniques for diagnosing problems, and generating and evaluating possible solutions

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN608 Verify new software and hardware releases	ICTTEN6094A Verify new software and hardware releases	Updated to meet Standards for Training Packages.	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN608 Verify new software and hardware releases

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- develop a plan for testing new software releases, including functionality and performance under load conditions
- develop a contingency plan recognising potential causes of problems and their impact on service levels
- test compatibility of software and hardware with existing system
- analyse impact of integration of new hardware and software release on the network and make recommendations for improvement.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain features and operating requirements of testing routines and equipment, key performance indicators (KPIs) and service level agreements
- explain information required to operate software and hardware according to a test specification
- outline manufacturer’s requirements for operation of equipment
- summarise specific organisational requirements relating to the activity and site conditions
- clarify system maintenance and upgrade procedures, codes of practice and other formal agreements impacting the work activity
- explain test methods, performance and integration requirements
- summarise typical issues and challenges that occur with new software and hardware releases.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- a system to verify compliance and compatibility of software and hardware
- test equipment currently used in industry
- systems manuals, vendor specifications and enterprise policy.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN609 Produce and evaluate architecture designs for convergent cellular mobile networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to specify design of the required mobile cellular general packet radio service (GPRS), third-generation (3G) and fourth-generation (4G) network architectures.

It applies to individuals with high-level technical skills who design and operate mobile wireless systems that meet the industry implementation of wireless convergence in telecommunications.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan and prepare for design of cellular mobile networks	1.1 Analyse requirements of the mobile network 1.2 Examine technical characteristics of the GPRS systems 1.3 Develop network architecture for a GPRS network, in addition to the circuit-switched domain of 2G (Generation) 1.4 Review 3G structure and identify network requirements to

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ELEMENT	PERFORMANCE CRITERIA
	provide a wide variety of services ranging from voice and paging services to interactive multimedia, including teleconferencing and internet access 1.5 Examine technical characteristics, data rates, operating frequencies and multiplexing schemes of the 3G system 1.6 Establish positioning and types of antennas, terminals, processors, required protocols and architecture, based on technical specifications and requirements
2. Design a GPRS (2.5G) cellular network	2.1 Investigate how 2.5G GPRS overlays the GSM network to transmit and receive transmission control protocol (TCP) and/or internet protocol (IP) based data to and from GPRS mobile devices
3. Design a 3G cellular network	3.1 Develop network architecture for a 3G network and explain functions of the network elements 3.2 Integrate a 3G network with a wireless local area network (WLAN)
4. Research and evaluate design features of proposed 4G cellular network	4.1 Investigate how a fully IP-based 4G system will provide an end-to-end IP integrated solution for voice, data and streamed multimedia to end-users roaming anytime and anywhere 4.2 Investigate access schemes of a 4G network 4.3 Investigate the implication for Internet Protocol version 6 (IPv6) in relation to 4G support of a greater number of IP-based wireless devices with applications for improved multicast, security and route minimisation capabilities 4.4 Investigate use of advanced antenna systems to enable 4G with high rate, high reliability and long range communications
5. Produce reports for architectural design for cellular networks	5.1 Present a report on the impact of competing technologies on each other and get consensus on concepts 5.2 Investigate potential interoperability and global roaming issues that may be faced by GSM, 2.5G, 3G and 4G cellular technologies

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance	Description

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	Criteria	
Reading	1.1, 4.1-4.4, 4.6, 5.2	• Comprehends and evaluates technical specifications to plan and prepare for complex cellular design work
Writing	1.3, 5.1	• Prepares clear and concise workplace documentation, including reports and recommendations, incorporating technical language to communicate complex information clearly and effectively
Oral Communication	5.1	• Uses specific and relevant language to clearly articulate technological issues
Numeracy	1.5	• Extracts and evaluates technical data, including equipment specifications during testing phase
Get the work done	1.1-1.6, 2.1, 3.1, 3.2, 4.1-4.4, 5.2	• Plans strategic priorities and outcomes within a flexible, efficient and effective context in a diverse environment exposed to competing demands • Considers strategic and operational potential of digital trends to achieve work goals, enhance work processes and create opportunities • Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information, and identifying and evaluating options against agreed criteria • Uses formal, analytical and lateral thinking techniques for diagnosing problems and generating and evaluating possible solutions

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN609 Produce and evaluate architecture designs for convergent cellular mobile networks	ICTTEN6169A Produce and evaluate architecture designs for convergent cellular mobile networks	Updated to meet Standards for Training Packages.	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN609 Produce and evaluate architecture designs for convergent cellular mobile networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- provide a detailed summary of the client's business domain when designing network
- provide a detailed summary of current industry-accepted network hardware and software products and their general features and capabilities, when designing a general packet radio service (GPRS) (2.5G) and 3G network
- design viable GPRS (2.5G) and 3G network solutions to meet particular business needs
- research design features of 4G cellular networks.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline general features and capabilities of current industry security products, devices and procedures
- provide detailed information regarding global system for mobile (GSM), GPRS (2.5G) and 3G network design
- provide a detailed summary of current industry-accepted cellular mobile network protocols
- summarise technical characteristics of GPRS systems including:
  - capability classes and multi-slot classes
  - coding schemes
  - data rates
  - management systems when evaluating roaming features
  - operating frequencies and modulation schemes

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  - remote user issues when establishing siting and types of antennas, terminals, processors, required protocols and GPRS (2.5G) and 3G network architecture, based on technical specifications and user requirements
- explain concepts of three or more current industry network development and design methodologies used when designing networks.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- cellular mobile network structures
- client requirements
- expected traffic volume
- information on a range of IT business solutions
- technical specifications
- vendors and vendor offerings and pricing.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN610 Design and configure an IP-MPLS network with virtual private network tunnelling

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to design an internet protocol-multiprotocol label switching (IP-MPLS) network, examine MLPS data flow and configure virtual private network (VPN) tunnelling.

It applies to individuals with excellent technical skills including designers and installers of Next Generation Networks (NGN). These IP networks provide fast internet, voice over internet protocol (VoIP) and internet protocol TV (IPTV) services.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan and design IP-MPLS network to meet business requirements	1.1 Determine IP-MPLS network design requirements in consultation with enterprise customer 1.2 Optimise factors affecting design 1.3 Use label stacking to route MPLS packets in the network to build of MPLS services

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Dimension layer-3 generation of core backbone to allow MPLS IP-VPN to provide MPLS convergence services 1.5 Use MPLS control plane to set up wavelengths 1.6 Produce design topology of a MPLS network to include location and types of edge label switch routers (LSR) and core LSRs in agreement with enterprise customer
2. Configure MPLS network and verify traffic engineering (TE) considerations	2.1 Configure edge and core LSRs to provide secure methods of transporting IP packets in the MPLS network using layer 2 protocols 2.2 Configure LSRs to provide toll bypass for convergence of voice and data over IP network 2.3 Classify traffic in MPLS terms and configure edge LSR to sort traffic into forward equivalent classes (FECs) 2.4 Install and remove two standardised signalling protocols for managing traffic engineering (TE) of MPLS paths 2.5 Configure MPLS-TE to provide routing on diverse paths to avoid congestion and guarantee bandwidth services
3. Configure VPN and provide a virtual private LAN service (VPLS)	3.1 Configure a MPLS VPN tunnel for a customer network to provide multipoint-to-multipoint VPN connectivity 3.2 Build a content hosting server into a MPLS based VPN to produce a media network 3.3 Use virtual private LAN services (VPLS) as a VPN method for wide area network (WAN) multipoint-to-multipoint ethernet connectivity spanning multiple metropolitan areas 3.4 Produce VPLS topology using an internet protocol IP-MPLS cloud with provider edge (PE) routers connecting VPLS domains associated with an enterprise customer
4. Complete documentation	4.1 Produce a final design plan including network elements, configuration details and recommendations for design changes 4.2 Notify customer and obtain sign-off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance	Description

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	Criteria	
Writing	4.1	• ,Prepares clear and concise workplace documentation including incorporating technical language to communicate complex information clearly and effectively
Oral Communication	1.1, 1.6	• Engages with customers, about technical and operational matters, using clear language and active listening, observational and questioning techniques to confirm, clarify or revise understanding
Interact with others	1.1, 1.6, 4.2	• Selects and uses appropriate conventions and protocols when consulting or negotiating with customers
Get the work done	1.2-1.6, 2.1-2.5, 3.1-3.4	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context for complex, high impact activities with strategic implications • Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information and identifying and evaluating options against agreed criteria • Uses formal, analytical and lateral thinking techniques for diagnosing problems and generating and evaluating possible solutions • Considers the strategic and operational potential of digital trends to achieve work goals, enhance work processes and create opportunities • Uses digital systems and tools to enter, store and analyse data

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN610 Design and configure an IP-MPLS network with virtual private network tunnelling	ICTTEN6172A Design and configure an IP-MPLS network with virtual private network tunnelling	Updated to meet Standards for Training Packages.	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN610 Design and configure an IP-MPLS network with virtual private network tunnelling

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- plan and design a multiprotocol label switching (MPLS) network that meets business requirements
- configure and test the MPLS network according to specified guidelines
- produce design topology of a MPLS network
- produce a final design plan including network elements, configuration details and recommendations for design changes
- implement secure virtual private network (VPN) tunnelling.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explore current industry-accepted hardware and software products used in an IP-MPLS network
- explain MPLS IP-VPN network operating systems including:
  - transmission technologies
  - protocols
- describe the effect of the customer's business domain, function and organisation on customer requirements and network equipment.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering of work and include access to:

- a live network and networked computers
- network design documentation, equipment specifications and organisational guidelines
- network components, routers, switches and multi-layer switches.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN611 Produce an ICT network architecture design

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to compile and evaluate business specifications from a client, and produce a set of architecture design solutions to cater for present and future forecast demands.

It applies to individuals working in the field who carry out design and implementation of technical solutions of information communications technology (ICT) networks, employed by telecommunications and information technology networking provisioning companies specialising in integrating converging and emerging technologies of ICT networks.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to produce ICT architecture design	1.1 Obtain the client's business specifications and business requirements from appropriate person 1.2 Review specifications and requirements to identify the type of ICT network and network specifications required 1.3 Consult with key stakeholders to identify their requirements

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Assess business problems, opportunities and objectives, and confirm details with appropriate person
2. Produce preliminary ICT network architecture design	2.1 Ascertain technical requirements, including hardware, software and network elements according to specifications 2.2 Select software solutions to suit business platform 2.3 Develop preliminary physical network diagrams as a preface to architecture blueprint 2.4 Produce a document on the possible impact of the network design on the business requirements
3. Evaluate preliminary design and likely performance using forecast demands	3.1 Predict forecast traffic demands, and impact on network design, from current and future demand requirements 3.2 Benchmark design using expected performance parameters 3.3 Review design's likely performance profile 3.4 Determine costs involved with a range of supplier products 3.5 Produce an evaluation report on predicted performance and costs of the network architecture design, addressing business specifications and recommendations
4. Finalise network design and obtain approval	4.1 Review benchmarks, requirements and final design proposed 4.2 Determine support and training requirements needed 4.3 Obtain latest technical specifications and pricing by contacting possible vendors 4.4 Document network design and present documentation to appropriate person for approval 4.5 Obtain sign off on final business solution

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.2, 2.1, 4.1	• Organises, evaluates and interprets technical documentation and relevant enterprise policy and documentation

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Writing	2.3, 2.4, 3.5, 4.4	• Prepares clear and concise workplace documentation, including diagrammatic material, incorporating technical language to communicate complex information clearly and effectively
Oral Communication	1.1, 1.3, 1.4	• Participates in verbal exchanges using clear language and active listening, observational and questioning techniques to confirm, clarify or revise understanding
Numeracy	3.4, 3.5	• Interprets numerical information according to business requirements and specifications to evaluate possible technical design scenarios within budgetary constraints
Interact with others	1.3, 4.3-4.5	• Selects and uses appropriate conventions and protocols when communicating with stakeholders in a range of work contexts
Get the work done	1.4, 2.2, 3.1-3.3, 4.2	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context for complex, high-impact activities with strategic implications • Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world and uses this to propose solutions • Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information, and identifying and evaluating options against agreed criteria • Uses formal, analytical and lateral thinking techniques for diagnosing problems and generating and evaluating possible solutions

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN611 Produce an ICT network architecture design	ICTTEN6206A Produce an ICT network architecture design	Updated to meet Standards for Training Packages.	Equivalent unit

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Links

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Assessment Requirements for ICTTEN611 Produce an ICT network architecture design

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- adapt technologies to specified technical solutions
- use site design software and hardware
- evaluate client specifications against accepted industry practices
- produce technical designs from business specifications
- analyse feedback from client and make proposal adjustments
- apply design concepts to business solutions
- produce technical reports
- make recommendations and offer optimum design solutions.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- summarise principles of the following technologies:
  - access networks
  - core networks
  - information communications technologies (ICT) network topologies
  - mobile cellular networks
  - network protocols and operating systems
  - optical networks and principles
  - radio frequency (RF) technologies and principles
  - radio frequency identification (RFID) hardware and software
- explain what is meant in the ICT sector by business processes

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- explain compatibility issues and resolution procedures
- summarise configuration of internet protocol (IP) networks
- outline desktop applications and operating systems
- summarise security protocols, standards and data encryption.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- a site for design work
- client functional requirements
- business specifications
- database software
- simulation software
- organisational guidelines
- a network or computer layout
- site design software and hardware
- information on a range of ICT business solutions.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN612 Design and manage internet protocol TV in a service provider network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to design a multiprotocol label switching (MPLS) network for internet protocol TV (IPTV) and manage delivery of IPTV services. This includes core and access networks for the service provider.

It applies to individuals with outstanding technical skills, including designers and installers of Next Generation Networks (NGN), IP networks providing fast internet, voice over internet protocol (VoIP), IPTV and internet TV services.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Produce and evaluate design requirements for an IPTV network	1.1 Analyse major video models and the impact video challenges have on design of an IPTV network 1.2 Evaluate IPTV against other competing TV broadcast technologies to determine optimum design approach 1.3 Produce the topology of an IPTV network, showing network architecture from IPTV standards' bodies and determine design requirements

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Plan dimensioning of network parameters for multicast and unicast video delivery over broadband in a service provider network
2. Design an IPTV network for video on demand (VoD) delivery	2.1 Design the content delivery system (CDS) to cache IPTV content in each major metropolitan area for broadcast or streaming VoD models to eliminate performance variability introduced by internet transport or core peering relationships 2.2 Design a video network to provide VoD loads with network solutions using VoD design requirements 2.3 Design a VoD application to meet bandwidth requirements and quality of service (QoS) requirements for commercial viability of IPTV network
3. Design and configure an MPLS IPTV network to meet business requirements	3.1 Determine IP-MPLS network design requirements 3.2 Investigate factors that affect design considerations and ways they can be minimised 3.3 Produce the design topology of a MPLS network to provide secure methods of transporting IP packets using layer 2 protocols 3.4 Design a MPLS layer over the IP networking structure, to combine efficiency of multicast protocols with traffic engineering (TE) facilities to enable fast packet forwarding for real time video streaming applications
4. Manage delivery of IPTV services	4.1 Determine operational processes required to support IPTV by operators 4.2 Produce a plan of the management and customer support model, including strategies dealing with delivery of VoD issues 4.3 Produce a plan of a video network using video delivery strategies to deliver optimum average revenue per user (ARPU) to serve the demographic of an area and the nature of an operator's business 4.4 Manage and monitor video across the network using a management tool

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance	Description

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	Criteria	
Reading	1.3	• Organises, evaluates and interprets standards documentation to properly evaluate design requirements
Writing	1.3, 3.3, 4.2, 4.3	• Prepares clear and concise workplace documentation, including diagrammatic material, incorporating technical language to communicate complex information clearly and effectively
Numeracy	4.3	• Undertakes a cost-benefit analysis of services based on the nature of the operator's business and the demographic area served
Get the work done	1.1-1.4, 2.1-2.3, 3.1,-3.4, 4.1-4.4	• Uses a mix of intuitive and formal processes to identify key information and issues, evaluate alternative strategies, anticipate consequences and consider implementation issues and contingencies • Experiments with possibilities of new systems, devices and applications before conducting a more sophisticated analysis of benefits and costs • Uses digital tools to access and organise complex data and analyse multiple sources of information for strategic purposes • Uses formal, analytical and lateral thinking techniques for identifying issues, generating and evaluating possible solutions

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN612 Design and manage internet protocol TV in a service provider network	ICTTEN6216A Design and manage internet protocol TV in a service provider network	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN612 Design and manage internet protocol TV in a service provider network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- produce and evaluate design requirements for an internet protocol TV (IPTV) network
- design IPTV network for voice on demand (VoD) delivery
- design and configure a multiprotocol label switching (MPLS) IPTV network to meet business requirements
- manage delivery of IPTV services.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- evaluate competing video delivery over broadband networks
- explore current industry-accepted IPTV hardware and software products
- summarise networking technologies including:
  - network operating systems
  - internet protocol (IP) networks
  - MPLS networks
- explain IPTV transmission technologies and protocols.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

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- protocols, configuration documents, management tools and standards
- network and demographic trends, and customer demand data.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN801 Plan a transmission network

Modification History

Release	Comments
Version 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to analyse requirements and plan a new or upgraded telecommunication transmission network or convergence to Next Generation Networks (NGN).

It applies to individuals with high-level technical skills working as technical officers, supervisors and engineers working with optical, dense wavelength division multiplexing (DWDM), fibre networks and wireless networks.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Scope the project	1.1 Obtain and interpret relevant legislation, codes, regulations and standards including work health and safety (WHS) and environmental requirements for the given work 1.2 Obtain project brief from appropriate person 1.3 Evaluate potential transmission options and select most suitable type of transmission network that meets criteria outlined

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ELEMENT	PERFORMANCE CRITERIA
	in project brief 1.4 Analyse limitations of transmission path characteristics and develop solutions for transmission impairments 1.5 Produce a report outlining reasons for selection of a transmission network, together with a shortlist of suitable equipment vendors and products 1.6 Obtain traffic load from network information sources or forecasts, and then dimension the proposed network service 1.7 Produce brief on relationship between transmission network architecture components and overall network, and their impact on the work 1.8 Evaluate equipment type and technologies to determine availability, cost and compatibility with existing network equipment 1.9 Determine resources and equipment needed for work according to enterprise procedures and check for correct operation and safety 1.10 Assess capacity limitation of various platforms in context of the work to optimise maximum network performance 1.11 Determine product capability and calculate allowable capacity of transmission network to allow for network growth
2. Produce link budget	2.1 Critically analyse transmission system using equipment and vendor's specifications to produce a link budget and assess resulting margin 2.2 Document results of link budget analysis
3. Produce deployment plan for transmission network	3.1 Conduct planning work using current equipment components and complying with transmission network deployment rules and exemption process criteria 3.2 Produce preliminary plan on network deployment that maintains transmission network integrity 3.3 Establish a solution to unexpected situations through discussion with appropriate personnel, with consideration to job specifications, safety and enterprise procedures 3.4 Review plan to ensure it complies with all standards and codes required when working on network access, and make adjustments where appropriate
4. Complete work	4.1 Produce final deployment plan including recommendations agreed with customer 4.2 Provide report on network management and performance

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ELEMENT	PERFORMANCE CRITERIA
	monitoring system to be incorporated in the transmission network to ensure network is performing at optimum level

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.9, 3.4	• Organises, evaluates and interprets complex technical and non-technical information including legislative, enterprise and policy documentation
Writing	1.5, 1.7, 2.2, 3.2, 3.4, 4.1, 4.2	• Prepares clear and concise workplace documentation, including reports and recommendations, incorporating technical language to communicate complex information clearly and effectively
Oral Communication	1.2	• Uses highly developed listening, observational and questioning skills to understand project scope and clarify and explore meaning
Numeracy	1.8, 1.11, 2.1	• Interprets numerical information to determine business costs and undertake link budget calculations, interpret results and evaluate different types of technical data
Navigate the world of work	1.1, 1.9, 3.3, 3.4	• Monitors adherence to organisational policies and protocols and legal and regulatory requirements of self and others
Interact with others	1.6, 3.3	• Selects and uses appropriate conventions and protocols when communicating with stakeholders in various work contexts • Collaborates with others to achieve joint outcomes, taking the lead in identifying all issues and facilitating agreement
Get the work done	1.3, 1.4, 1.8, 1.9, 1.10, 1.11, 2.1, 3.1, 3.3	• Uses combination of formal, logical planning processes and an increasingly intuitive understanding of context for complex, high impact activities with strategic implications • Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world and uses these to understand uses and potential of technology • Implements actions according to a predetermined plan,

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		making adjustments if necessary • Takes responsibility for high-impact decisions in complex situations involving many variables and constraints • Uses formal analytical and lateral thinking techniques for identifying issues, generating and evaluating possible solutions

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN801 Plan a transmission network	ICTTEN7193B Plan a transmission network	Updated to meet Standards for Training Packages. Recoded and minor changes to PC's to meet AQF requirements.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN801 Plan a transmission network

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- evaluate potential transmission options and select most suitable type of transmission network
- analyse effect of transmission path characteristics on transmission systems
- develop solutions for transmission impairments
- select appropriate testing regimes for transmission technologies
- determine key multiplexing features of transmission technologies
- develop transmission network work plan.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline impact of relevant legislation, codes, regulations and standards involved with planning networks
- explain alternating current and transmission line theory
- compare emerging telecommunications switching and transmission technologies
- define network capacity and capability management
- outline capacity limitation of various platforms
- explain commercial considerations of Access Network deployment
- outline common switching and transmission support services
- explore compatibility issues for new technologies and equipment
- evaluate currency of technology and equipment under consideration
- explain data transmission
- summarise digital multiplexing techniques and hierarchies

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- clarify enterprise deployment rules
- explain exemption process criteria
- outline network topologies
- formulate product capability and availability that are allowable within a transmission network
- establish aspects of telecommunications when planning a network, including:
  - alarm management
  - bearers
  - performance monitoring systems
  - transmission:
  - architectures and geographical categorisation
  - information sources
  - technology and equipment
- determine a cost analysis for a planned network.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the Telecommunications – Telecommunications Networks Engineering field of work and include access to:

- a site to plan transmission network
- equipment and system manuals and specifications
- legislation and documentation to plan a transmission network.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN802 Manage alignment of systems with product and technology strategy

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to develop a technology roadmap and interface management system to align and integrate systems with a product and technology strategy.

It applies to individuals with technical and task management skills who measure network performance according to manufacturer's design specifications.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Develop technology roadmap	1.1 Critically analyse market research information and determine customer needs within product and technology strategy from a technology roadmap 1.2 Evaluate enterprise and technology issues which will affect design of the system, and translate them into system requirements 1.3 Evaluate program, product and technology needs that affect

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ELEMENT	PERFORMANCE CRITERIA
	definition of the system life-cycle 1.4 Develop systems integration, verification and validation plans from the design requirements 1.5 Develop and communicate key aspects on implementation of the technology roadmap to stakeholders and customers
2. Develop interface management of system elements	2.1 Determine system element interfaces and sources of complexity for interface management of the system 2.2 Develop a process and appropriate techniques to be adopted for interface management of system elements 2.3 Create a control process of system element interfaces of the management system 2.4 Liaise and arbitrate conflicts in the interfaces definition process
3. Implement systems integration	3.1 Evaluate suitability of system integration, verification and validation plans for the product and technology strategy of the technology road map for a consumer product 3.2 Develop systems integration, verification and validation plans for complex systems, including method and timing for each activity 3.3 Manage system integration plan and diagnose complex faults 3.4 Document fault conditions, report to appropriate person and follow up corrective actions 3.5 Prepare evidence for customer acceptance and certification of the system integration management plan for consumer product 3.6 Plan and manage a transition to operational activity of product

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.4, 3.1	• Organises, evaluates and interprets technical documentation, software and hardware manuals, specifications and relevant enterprise policy
Writing	1.4, 3.2, 3.4, 3.5	• Prepares clear and concise workplace documentation, including diagrammatic material incorporating

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		technical language, to communicate complex information clearly and effectively
Oral Communication	1.1, 2.4	• Participates in verbal exchanges using highly developed listening, observational and questioning skills to understand others' perspectives, and clarify, explore and extend meaning
Interact with others	1.5, 2.4, 3.4	• Selects and uses appropriate conventions and protocols when communicating with stakeholders in a range of work contexts • Collaborates with others to achieve joint outcomes, taking the lead in identifying issues and facilitating agreement
Get the work done	1.2-1.5, 2.1-2.3, 3.1-3.4, 3.6	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context for complex, high-impact activities with strategic implications • Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world and uses these to plan appropriate systems • Implements actions according to a predetermined plan, making adjustments if necessary • Takes responsibility for high-impact decisions in complex situations involving many variables and constraints • Uses formal analytical and lateral thinking techniques to resolve software, hardware and logistics problems

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN802 Manage alignment of systems with product and technology strategy	ICTTEN7219A Manage alignment of systems with product and technology strategy	Updated to meet Standards for Training Packages. Recoded and minor changes	Equivalent unit

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Code and title **current version**	**Code and title** **previous version**	**Comments**	**Equivalence status**
		to PC's to meet AQF requirements.	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN802 Manage alignment of systems with product and technology strategy

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- plan implementation and testing of new system requirements, including system functionality and performance under load conditions
- manage interface elements of a new system
- implement systems integration
- recognise potential causes of problems and service level impact
- analyse impact of integration of system changes on network
- prepare documentation for customer acceptance and certification of system integration.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- summarise technology issues for a specified enterprise
- explain integration, verification and validation plans
- summarise interface management systems
- outline legislation, codes of practice and other formal agreements directly impacting system integration
- summarise specific work health and safety (WHS) requirements that impact activity in terms of safety of self and the general public
- explain system element interfaces
- summarise system integration solutions techniques
- explain system life cycles
- define technology roadmaps.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the Telecommunications – Telecommunications Networks Engineering field of work and include access to:

- a site where alignment of computer support systems with a product and technology strategy may be conducted
- software tools currently used in industry
- vendor products, specifications, equipment and enterprise policy required for the activity.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN803 Translate domain and solution architectures into platform requirements and designs

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to develop, deploy, manage and optimise the entire solution life cycle via translation for an existing or new infrastructure of Next Generation Technology (NGN).

It applies to individuals with highly developed technical skills who use design software and simulation to test system performance to a manufacturer's or design specification.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Develop system design requirements	1.1 Produce system requirements specifications for a complex project involving enterprise and technology issues using the simplest possible technology and making the system modular 1.2 Resolve and negotiate requirement conflicts to establish a complete and consistent requirement set 1.3 Produce and develop acceptance criteria for requirements

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Design a requirements management plan with categorisations, structures and sources of complexity 1.5 Develop a process to manage requirements, enabling users to influence future improvements
2. Produce system design based on requirements	2.1 Evaluate strengths and weaknesses of relevant technologies in context of the design requirement and needs for systems integration 2.2 Create range of alternative interdisciplinary concepts and assess their attributes 2.3 Plan for incorporation of later life-cycle design attributes while developing design requirements 2.4 Devise a system design strategy and approach, using tools and techniques to conduct functional analysis 2.5 Produce a set of parameters to track critical aspects of the design 2.6 Use documentation, modelling and simulation tools and techniques to represent a system or system element 2.7 Use complex simulations to evaluate design concepts for a system or system element 2.8 Produce a report to evaluate and advise on risks, suitability and limitations of models and simulations 2.9 Identify underlying domain-specific issues, strategy and approach to be adopted for ensuring system robustness 2.10 Produce a robust design using domain-specific strategy and approach for platform requirements and designs
3. Verify solution design and traceability	3.1 Align specific aspects of the design to original intent 3.2 Verify and track specific aspects of current design against original intent throughout the supply chain 3.3 Compare verification requirements with system requirements 3.4 Use change control and configuration management to implement remedial actions and change control for inconsistencies

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

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Skill	Performance Criteria	Description
Reading	2.6	• Organises, evaluates and critiques ideas and information from a wide range of complex texts
Writing	1.1, 1.3-1.5, 2.5, 2.8, 2.10	• Demonstrates sophisticated writing skills by selecting appropriate conventions and stylistic devices to express precise meaning
Oral Communication	1.2	• Participates in verbal exchanges using appropriate tone and clear language to address key personnel • Uses listening and questioning skills to confirm understanding
Interact with others	1.2	• Collaborates and negotiates to achieve agreeable outcomes in potentially contentious situations
Get the work done	1.1, 1.5, 2.1-2.4, 2.6, 2.7, 2.9, 2.10, 3.1-3.4	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context for complex, high-impact activities with strategic implications • Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world and uses this to analyse and design solutions • Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information and identifying and evaluating options against agreed criteria • Uses formal analytical and lateral thinking techniques for diagnosing problems and generating and evaluating possible solutions

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTTEN803 Translate domain and solution architectures into platform	ICTTEN7220A Translate domain and solution architectures into platform	Updated to meet Standards for Training Packages.	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
requirements and designs	requirements and designs	Recoded to meet AQF requirements.	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN803 Translate domain and solution architectures into platform requirements and designs

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- develop system design requirements
- evaluate design concepts for system or system element using complex simulations
- produce a system design using domain specific strategy to platform requirements and design
- use functional analysis tools
- verify solution design and traceability.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain complex simulation techniques
- summarise current enterprise platforms and designs
- outline design of management plans
- explain domain and solution architectures
- determine and summarise technological issues for a specified enterprise
- outline information required to simulate computer system elements according to a test specification
- explain interdisciplinary concepts and attributes
- explain life cycle design attributes
- contrast remedial actions and select control for inconsistencies
- explain solution design and traceability
- provide a detailed summary of tools required to conduct functional analysis.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the Telecommunications – Telecommunications Networks Engineering field of work and include access to:

- a site where development, deployment, management and optimisation of domain and solution architectures into platform requirements and designs can be undertaken
- documentation, modelling and simulation tools currently used in industry
- tests and equipment currently used in industry.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN804 Manage end to end architectural solutions across multiple domains

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to analyse business options and design for network infrastructure service providers and implement end-to-end architectural solutions.

It applies to individuals with excellent technical, communication and planning skills working in project management roles with authority to direct installation activities.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Evaluate tools and techniques for architectural design	1.1 Apply principles of architectural design within the life cycle of application software 1.2 Develop a process to apply appropriate tools and techniques for architectural design of end-to-end solutions 1.3 Evaluate and select appropriate analysis and selection techniques to develop a partition between discipline technologies and derive discipline-specific requirements

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ELEMENT	PERFORMANCE CRITERIA
2. Analyse design options for optimal solutions	2.1 Critically analyse business options to support architectural design trade-offs for an optimal design solution 2.2 Develop alternative architectural designs traceable to the requirements 2.3 Evaluate a range of architectural solutions and justify selection of the optimum solution
3. Develop interface requirements for effective solutions across multiple domains	3.1 Evaluate system element interfaces and sources of complexity for interface management of the system across multiple domains 3.2 Develop a process and appropriate techniques to be adopted for the interface management of system elements for end-to-end architectural solutions 3.3 Produce a control process for system element interfaces of the management system 3.4 Liaise and arbitrate between stakeholders where there are conflicts in the definition of interfaces
4. Manage end-to-end systems integration	4.1 Evaluate suitability of system integration, verification and validation plans for end-to-end architectural solutions across multiple domains 4.2 Develop systems integration, verification and validation plans for complex systems to ensure a viable integration process 4.3 Manage system integration plan and diagnose complex faults 4.4 Document fault conditions, report to appropriate person and follow up corrective actions 4.5 Prepare evidence for customer acceptance and certification of the system integration management plan 4.6 Plan and manage a transition to operational activity for the end-to-end solution
5. Incorporate components of an architecture from a third party	5.1 Negotiate with vendor for acceptable vendor agreements and agreed roles and responsibilities of each party 5.2 Manage vendor within a clearly defined process for dealing with defects and scope changes 5.3 Plan beyond delivery of specific elements and establish requirements for ongoing maintenance and support from vendor
6. Manage requirements for the architecture solution	6.1 Negotiate minimum component costs with vendors and analyse vendor component costs as part of assessment for the appropriateness of vendor’s quote

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ELEMENT	PERFORMANCE CRITERIA
	6.2 Manage vendor selection process to provide high-quality solutions within appropriate costings

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	2.1	• Organises, evaluates and interprets a range of complex documentation to evaluate product and technology needs
Writing	2.2, 2.3, 3.3, 4.2, 4.4, 4.5	• Prepares clear and concise workplace documentation including reports and designs incorporating technical language to communicate complex information clearly and effectively
Oral Communication	3.4, 4.4, 5.1, 5.2, 6.1	• Participates in verbal exchanges with key personnel, customers and contractors using appropriate tone and clear language • Uses listening and questioning skills to confirm understanding
Interact with others	3.4, 4.4, 5.1, 5.2, 6.1	• Selects and uses appropriate conventions and protocols when communicating with customers, vendors or technical personnel in a range of work contexts • Collaborates and negotiates to achieve agreeable outcomes in potentially contentious situations
Numeracy	6.1	• Interprets numerical information to determine best value-for-money solutions according to business requirements
Get the work done	1.1-1.3, 2.1, 2.3, 3.1, 3.2, 4.1, 4.3, 4.4, 4.6, 5.3, 6.2	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context for complex, high-impact activities with strategic implications • Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world and uses these to plan complex systems • Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information and identifying and evaluating options

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		against agreed criteria • Uses formal analytical and lateral thinking techniques for diagnosing problems and generating and evaluating possible solutions

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN804 Manage end to end architectural solutions across multiple domains	ICTTEN7221A Manage end to end architectural solutions across multiple domains	Updated to meet Standards for Training Packages. Recoded and minor changes to PC's to meet AQF requirements.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN804 Manage end to end architectural solutions across multiple domains

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- evaluate tools and techniques for architectural design
- analyse design options for optimal solutions
- develop interface requirements for effective solutions across multiple domains
- manage end-to-end systems integration
- incorporate components of a third party architecture
- manage requirements for the architecture solution.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- provide a detailed summary of architectural design tools
- explain interface management
- outline management of end-to-end system integration
- summarise new end-to-end architecture design solutions
- explain solutions for business options across multiple domains
- outline system integration solution techniques
- summarise system interfaces
- explain validation plans
- explain importance of vendors' agreements with specific reference to roles and responsibilities of each party
- identify and quantify components’ costs.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the Telecommunications – Telecommunications Networks Engineering field of work and include access to:

- a site where architecture solutions across multiple domains can be managed
- simulation software tools currently used in industry
- vendor products, specifications, equipment and enterprise policy required for the activity.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN805 Manage solution architecture and impacts in line with organisational processes

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to analyse business options to plan, develop and manage solution architecture systems integration across multiple architectures for a telecommunications service provider.

It applies to individuals with excellent technical, communication and planning skills working in project management roles with authority to direct installation activities.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Develop plan to support architectural design process	1.1 Prepare a plan with techniques to support the architectural design process and communicate the solution to different stakeholder groups 1.2 Critically analyse business options to support architectural design trade-offs for optimal design solution 1.3 Evaluate strengths and weaknesses of relevant technologies in

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ELEMENT	PERFORMANCE CRITERIA
	context of the requirement 1.4 Assess a range of interdisciplinary concept ideas and effect their attributes would have on the design requirements 1.5 Prepare a solutions architecture plan detailing all possible solutions
2. Develop interface requirements for effective solutions across multiple architectures	2.1 Evaluate system element interfaces and sources of complexity for interface management of the system across multiple architectures 2.2 Develop a process and appropriate techniques to be adopted for interface management of system elements for solution architecture 2.3 Produce a control process of system element interfaces of the management system 2.4 Liaise and arbitrate between stakeholders where there are conflicts in definition of interfaces
3. Manage solution architecture systems integration	3.1 Evaluate suitability of system integration, verification and validation plans for solution architecture from requirements 3.2 Develop systems integration, verification and validation plans for complex systems to ensure viable integration process 3.3 Manage system integration plan and diagnose complex faults 3.4 Document fault conditions, report to appropriate person and follow up corrective actions 3.5 Prepare evidence for customer acceptance and certification of system integration management plan 3.6 Plan and manage a transition to operational activity for the solution architecture
4. Manage solution implementation and notify stakeholder groups	4.1 Produce final project management requirements against solution architecture plan and notify stakeholder groups of impending implementation 4.2 Evaluate impact of proposed project solutions on customers and enterprise 4.3 Manage solution architecture activities as part of overall project plan and monitor solution architecture risks 4.4 Manage amendments to solution architecture processes to meet needs of the project and apply necessary corrective actions

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	3.1	• Organises, evaluates and interprets a range of complex documentation such as software and hardware manuals
Writing	1.1, 1.5, 3.2, 3.4, 3.5, 4.1	• Prepares clear and concise workplace documentation, including recommendations, incorporating technical language to communicate complex information clearly and effectively
Oral Communication	2.4	• Participates in verbal exchanges using tone and language appropriate to audience and environment
Interact with others	2.4, 3.4, 4.1	• Selects and uses appropriate conventions and protocols when communicating with stakeholders in a range of work contexts • Collaborates and negotiates to achieve agreeable outcomes in potentially contentious situations
Get the work done	1.2-1.4, 2.1-2.3, 3.1, 3.3, 3.4, 3.6, 4.2-4.4	• Operates from a broad conceptual plan, developing operational detail in stages, regularly reviewing priorities and performance during implementation, identifying and addressing issues • Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world and uses this to prepare proposals • Takes responsibility for high-impact decisions in complex situations involving many variables and constraints • Uses formal analytical and lateral thinking techniques to resolve domain, technology and logistics problems • Monitors outcomes of decisions, considering results from a range of perspectives and identifying key concepts and principles and their impact on customers and enterprise

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTTEN805 Manage solution architecture and impacts in line with organisational processes	ICTTEN7222 A Manage solution architecture and impacts in line with organisational processes	Updated to meet Standards for Training Packages. Recoded and minor changes to PCs to meet AQF requirements.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN805 Manage solution architecture and impacts in line with organisational processes

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- prepare an architecture plan exploring a range of alternative solutions
- develop interface requirements for effective solutions across multiple architectures
- manage solution architecture systems integration
- analyse impact of proposed project solutions on customers and enterprise
- prepare evidence for customer acceptance and certification of system integration management plan
- produce final project management requirements.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify and define features and operating requirements of complex systems, key performance indicators (KPIs) and service level agreements
- outline information required to define solution architecture and impacts in line with organisational processes
- summarise interdisciplinary concepts across multiple architectures
- outline issues and challenges occurring with system changes
- explain legislation, codes of practice and other formal agreements directly impacting system integration
- summarise manufacturer’s requirements for operation of systems equipment
- identify and critique relevant organisational policies and procedures
- outline performance and integration requirements
- summarise solutions architecture alternatives

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- summarise specific work health and safety (WHS) requirements that impact activity in terms of safety of self and the public
- outline system element interfaces for solution architecture
- explain system integration plans
- explain validation plans.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the Telecommunications – Telecommunications Networks Engineering field of work and include access to:

- a site where development and management of solution architecture systems integration across multiple architectures may be conducted
- software tools currently used in industry
- vendor products, specifications, equipment and enterprise policy required for the activity.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN806 Manage application layer solutions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to develop, evaluate, manage, deploy and maintain application layer solutions for new solutions or existing network telecommunications service.

It applies to individuals with highly developed technical skills working as network engineering staff or senior technical officers with appropriate project management roles and authority to direct activities of installation staff, manufacturers and vendors.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications networks engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Develop application layer solutions	1.1 Produce requirements for applications layer solutions for delivery of new applications layer solutions to customers using forecasting demand data 1.2 Prepare a plan for an organisational change control process and integration of new solutions within a complete network infrastructure

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ELEMENT	PERFORMANCE CRITERIA
	1.3 Produce a test management schedule for the testing process of application product 1.4 Translate complex design and architecture requirements to traceable application characteristics according to design requirements 1.5 Develop application architecture solution specifications using an industry process according to design requirements 1.6 Develop application software resource profiling and select suitable vendor for negotiations 1.7 Translate complex requirements into software packaging 1.8 Produce software deployment mapping and version control to ensure complete integration and compatibility of application solution with existing system 1.9 Complete configuration management and provide complex input network design requirements
2. Critically analyse test results of application layer solutions	2.1 Use design document and integration document software to replicate issues exhibited in test environment 2.2 Certify software solution compatibility and compliance to requirements using a web-based test management tool (quality centre) to conduct performance evaluation tests 2.3 Critically analyse test reports to evaluate load balancing and network security issues in test environment 2.4 Resolve complex issues in interface to isolate defects
3. Manage deployment of application layer solutions	3.1 Plan and prepare evidence for customer acceptance and certification 3.2 Plan and manage transition to operation activities required for transition to operation of integrated application layer solution 3.3 Prepare installation failures procedure to make changes while maintaining service levels 3.4 Manage change implementation plan to maintain system stability
4. Maintain currency of application layer solutions	4.1 Manage ongoing monitoring activities to prolong new applications layer solution life cycle for cost-effective business reasons 4.2 Produce tuning activities to make efficient use of resources 4.3 Analyse current demands for resources to derive forecasts and future requirements

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ELEMENT	PERFORMANCE CRITERIA
	4.4 Produce a capacity plan predicting infrastructure resource needs to achieve agreed service levels

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.4, 1.5, 2.3	• Organises, evaluates and interprets a range of complex technical documentation including software and hardware manuals
Writing	1.2, 1.3, 1.8, 3.3, 4.4	• Prepares clear and concise workplace documentation including complex plans incorporating technical language to communicate complex information clearly and effectively
Numeracy	1.1, 2.3, 4.1	• Analyses and synthesises highly embedded mathematical information in a broad range of tasks and texts
Get the work done	1.4-1.6, 1.8, 1.9, 2.1-2.4, 3.1, 3.2, 3.4, 4.1-4.4	• Operates from a broad conceptual plan, developing operational detail in stages, regularly reviewing priorities and performance during implementation, and identifying and addressing issues • Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world and uses this to devise solutions • Uses a broad range of strategies to store, access and organise virtual information, recognising design choices will influence what information is retrieved and how it may be interpreted and used • Takes responsibility for high-impact decisions in complex situations involving many variables and constraints • Uses formal analytical and lateral thinking techniques to resolve logistics problems • Monitors outcomes of decisions, considering results from a range of perspectives and identifying key concepts and principles and their impact on customers and enterprise

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Unit Mapping Information

Code and title **current version**	**Code and title** **previous version**	**Comments**	**Equivalence status**
ICTTEN806 Manage application layer solutions	ICTTEN7223A Manage application layer solutions	Updated to meet Standards for Training Packages. Recoded and minor changes to elements and PCs to meet AQF requirements.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN806 Manage application layer solutions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- produce a test management schedule for testing process of application product
- develop application architecture solution specifications using an industry process
- produce software deployment mapping and version control
- analyse test results of application layer solutions
- prepare evidence for customer acceptance and certification
- prepare an installation failures procedure
- manage ongoing monitoring activities
- produce tuning activities
- produce a capacity plan predicting infrastructure resource needs.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain installation failure procedures
- summarise legislation, codes of practice and other formal agreements that directly impact activity
- explain important tenets of managing change
- explain new applications layer solutions
- define software and hardware resources required by an application layer
- outline specific workplace health and safety (WHS) requirements that impact activity in terms of safety of self and the public
- outline system integration techniques
- explain test management scheduling

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- summarise tuning activities to maintain currency
- explain use of forecasting demand data
- explain use and purpose of test management tools.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the Telecommunications – Telecommunications Networks Engineering field of work and include access to:

- a site where management of application layer solutions may be conducted
- software tools currently used in industry
- vendor products, specifications, equipment and enterprise policy required for the activity.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN807 Manage voice, data and internet protocol network solutions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to integrate new solutions to an existing network and manage change implementation.

It applies to individuals with excellent technical skills working as network engineering or senior technical staff within project management roles with authority to direct activities of installation staff, manufacturers and vendors.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Develop voice, data and IP network solutions	1.1 Produce requirements for voice, data and IP network solutions for delivery of new voice, data and IP networks to customers using forecasting demand data 1.2 Prepare plan for organisational change control process and integration of new solutions within a complete network infrastructure

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ELEMENT	PERFORMANCE CRITERIA
	1.3 Produce test management schedule for testing process of network product solution 1.4 Translate complex design and architecture requirements to traceable software application characteristics according to design requirements 1.5 Develop network architecture solution specifications using industry process according to design requirements 1.6 Develop software and hardware resource profiling and select suitable vendor for negotiations 1.7 Translate complex requirements into software packaging 1.8 Produce software deployment mapping and version control to ensure complete integration and compatibility of network application solution to existing system 1.9 Complete configuration management and provide complex input network design requirements
2. Critically analyse test results of voice, data and IP network solutions	2.1 Use design document and integration document software to replicate issues exhibited in test environment 2.2 Certify software solution compatibility and compliance to requirements using web-based test management tool (quality centre) to conduct performance evaluation tests 2.3 Critically analyse test reports to evaluate load balancing and network security issues in test environment 2.4 Resolve complex issues in interface to isolate defects
3. Manage deployment of voice, data and IP network solutions	3.1 Plan and prepare evidence for customer acceptance and certification 3.2 Plan and manage transition to operation activities required for transition to operation of integrated IP network solution 3.3 Prepare installation failures procedure to make changes while maintaining service levels 3.4 Manage change implementation plan to maintain system stability
4. Maintain currency of voice, data and IP network solutions	4.1 Manage ongoing monitoring activities to prolong new IP network solution life cycle for cost-effective business reasons 4.2 Produce tuning activities to make efficient use of resources 4.3 Analyse current demand for resources to derive forecasts and future requirements 4.4 Produce a capacity plan predicting infrastructure resource

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ELEMENT	PERFORMANCE CRITERIA
	needs to achieve agreed service levels

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.2, 1.4, 1.5, 2.3	• Organises, evaluates and interprets complex technical documentation, such as software and hardware manuals and design specifications
Writing	1.3, 1.5, 1.9, 3.1, 3.3, 4.4	• Prepares clear and concise workplace documentation including reports and recommendations incorporating technical language to communicate complex information clearly and effectively
Numeracy	1.1, 2.3, 4.1, 4.3	• Uses numerical information to interpret results, evaluate different types of technical data, take measurements and determine cost-effective outcomes
Get the work done	1.1-1.8, 2.1, 2.2, 2.4, 3.1, 3.2, 3.4, 4.1, 4.4	• Uses combination of formal, logical planning processes and an increasingly intuitive understanding of context for complex, high-impact activities with strategic implications • Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world and uses this to devise solutions • Implements actions according to a predetermined plan, making adjustments if necessary • Takes responsibility for high-impact decisions in complex situations involving many variables and constraints • Uses formal analytical and lateral thinking techniques for identifying issues, and developing and evaluating procedures for network solutions

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Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN807 Manage voice, data and internet protocol network solutions	ICTTEN7224A Manage voice, data and internet protocol network solutions	Updated to meet Standards for Training Packages. Recoded and minor changes to PCs to meet AQF requirements.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN807 Manage voice, data and internet protocol network solutions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- produce a test management schedule
- develop network architecture solution specifications
- develop software and hardware resource profiling and select suitable vendor for negotiations
- undertake configuration management of voice, data and internet protocol (IP) network, and provide complex input network design requirements
- analyse test reports to evaluate load balancing and network security issues
- plan and prepare evidence for customer acceptance
- prepare installation failures procedure
- produce tuning activities to enable efficiencies
- produce capacity plan predicting infrastructure resource needs.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- summarise installation failure procedures
- investigate change management strategies relevant to introduction of new technologies
- explain new IP network solutions
- identify and contrast software and hardware resources relevant to project
- explain system integration techniques
- explain test management scheduling
- provide detailed summary of tuning activities necessary to maintain currency
- explain use of forecasting demand data

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- identify and contrast various test management tools.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the Telecommunications – Telecommunications Networks Engineering field of work and include access to:

- a site where management of voice, data and IP network solutions can be undertaken
- software and hardware resources suitable for developing, deploying and managing voice, data and IP network solutions
- tests and equipment currently used in industry.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN808 Manage network testing strategies

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to plan and manage a test regime for evaluation of application software for a telecommunications network.

It applies to individuals with high-level technical skills working as network engineers or senior technical staff within project management roles.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan test effort and develop test strategy for an application software	1.1 Critically analyse functionalities of an application software from the system design document and create test strategy for new telecommunications product line 1.2 Produce steps for test strategy, including attributes of each step according to enterprise policy 1.3 Produce test strategy for evaluating suitability of application software for integration into telecommunications network 1.4 Critically analyse test strategy and identify types of risks that

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ELEMENT	PERFORMANCE CRITERIA
	would hinder test performance or reality
2. Plan test strategy for regime	2.1 Produce phases of a test cycle for a test regime according to system design document 2.2 Assess a range of tests required to evaluate performance and functionality of application software and determine tests required to suit the test regime 2.3 Evaluate features of testing tool and debuggers and select an appropriate tool to test software application and detect faults 2.4 Evaluate elements of test plan that cover testing functionality of the application software
3. Design test plan and produce test reviews	3.1 Determine forecast time, effort and cost for low and medium intensity projects to perform testing 3.2 Develop a test case or test scenario with prerequisite states based on requirements to generate expected test results for test plan 3.3 Produce test plan for specific phases based on requirements of project specifications for the application software 3.4 Produce test reporting associated with particular test phases within test plan 3.5 Critically analyse test reports and evaluate impact of test plan on the testing environment 3.6 Manage progress of test plan to minimise risks associated with testing and ensure test compliance with test requirements 3.7 Report any detected defects to product evaluation personnel, and prepare a strategy to manage defects
4. Manage test traceability	4.1 Create a traceability matrix to correlate relationship between marketing requirements and detailed requirements of software product to matching parts of design, test plan and test cases 4.2 Critically analyse testing metrics produced by test tool to manage tracking of defects and plan process improvements based on the metrics 4.3 Produce an evaluation report from traceability matrix to manage defects or failures from the test plan

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 2.1, 3.5	• Organises, evaluates and critiques ideas and information from a wide range of complex texts
Writing	1.1, 1.2, 1.3, 3.3, 3.7, 4.3	• Prepares clear and concise workplace documentation including reports and recommendations incorporating technical language to communicate complex information clearly and effectively
Numeracy	3.1, 3.5, 4.2	• Uses numerical information to interpret and evaluate different types of technical data, take measurements and determine cost-effective outcomes
Navigate the world of work	1.2	• Adheres to organisational procedures and protocols
Interact with others	3.7	• Selects and uses appropriate conventions and protocols when communicating with technical personnel in a range of work contexts
Get the work done	1.1-1.4, 2.1-2.4, 3.1-3.4, 3.6, 4.1, 4.2	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context for complex, high impact activities with strategic implications • Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world and uses this to devise strategies • Implements actions according to a predetermined plan, making adjustments as necessary • Takes responsibility for high-impact decisions in complex situations involving many variables and constraints • May use formal analytical and lateral thinking techniques resolving software, hardware and logistics problems

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Unit Mapping Information

Code and title **current version**	**Code and title** **previous version**	**Comments**	**Equivalence status**
ICTTEN808 Manage network testing strategies	ICTTEN7225A Manage network testing strategies	Updated to meet Standards for Training Packages. Recoded and minor changes to PCs to meet AQF requirements.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN808 Manage network testing strategies

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- produce steps in developing test strategy
- produce test strategy for evaluating suitability of application software
- design test plan and produce test reviews
- develop a test case or test scenario
- produce a test plan for specific phases
- produce test reporting associated with particular test phases within test plan
- create traceability matrix
- produce an evaluation report from the traceability matrix to manage defects or failures from the test plan.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain applications software features and functionalities
- summarise configuration of software testing tools
- outline creation of a traceability matrix
- provide detailed summary of different elements of test plans and risks associated with implementation
- outline features of testing tools and debuggers
- explain identification of types of risks
- consider legislation, codes of practice and other formal agreements that directly impact testing
- explain how to manage software defects

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- summarise management of test traceability
- outline phases of test cycles
- outline production of test reviews
- consider specific workplace health and safety (WHS) requirements that impact activity in terms of safety of self and the public
- explain relevant steps in developing test strategy
- outline testing procedures and testing cycles for various system applications.
-

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the Telecommunications – Telecommunications Networks Engineering field of work and include access to:

- a site where planning and management of a test regime for evaluation of application software may be conducted
- software tools currently used in industry
- vendor products, specifications, equipment and enterprise policy required for the activity.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN809 Analyse business specifications to produce technical solutions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to apply technical solutions in network designs for telecommunications and ICT networking provisioning companies specialising in integrating converging and emerging technologies of ICT networks.

It applies to individuals working as telecommunication officers in service and provision work who carry out design and implementation of technical solutions of information communication technology (ICT) networks.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to critically analyse business specifications	1.1 Research application of a suitable business model for telecommunication service provisioning that meets agreed customer requirements 1.2 Obtain business requirements and business specifications to provide data for the model

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ELEMENT	PERFORMANCE CRITERIA
	1.3 Determine business drivers and requirements of key stakeholders and customers, both internal and external 1.4 Evaluate business objectives and customer requirements for input into the model
2. Produce technical solutions to meet business imperatives	2.1 Research tools and templates for analysing business models and provide reports on technical design and specifications 2.2 Develop technical solutions for customer in response to drivers and business requirements 2.3 Evaluate costs involved in implementing ICT technical solutions for customer 2.4 Produce cost benefit analysis to assess viability and optimum timing for deploying the technical solution for maximum return on investment (ROI) 2.5 Investigate a range of vendor products to determine most suitable to meet technical requirements and customer needs 2.6 Produce a report documenting technical solutions addressing business specifications and recommendations against customer requirements
3. Evaluate impact of technical requirements on the business	3.1 Review and assess business constraints, opportunities and objectives 3.2 Determine technical requirements according to input-output, interface, process flow or quality requirements 3.3 Critically analyse hardware, software and network requirements to suit the business plan 3.4 Build business platform based on IT/ICT technical solutions 3.5 Investigate processes in need of being changed by a business solution 3.6 Document impact of technical requirements on the business
4. Document and validate agreed solutions	4.1 Submit technical requirements and solution overview to management for feedback 4.2 Analyse feedback and incorporate change as required 4.3 Document changes and distribute final business solution to internal and external stakeholders

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.4, 2.1, 3.1-3.3, 4.2	• Organises, evaluates and critiques information from a wide range of complex texts
Writing	1.3, 2.4, 2.6, 3.6, 4.2, 4.3	• Generates complex written texts, demonstrating control over a broad range of writing styles and purposes
Oral Communication	1.3, 4.2	• Establishes and maintains complex and effective spoken communication in a broad range of contexts • Displays depth of understanding of complex oral texts which include multiple and unstated meanings
Numeracy	2.3, 2.4	• Uses mathematical formulas and calculations to estimate and plan project costs and evaluate cost-benefits of completed project
Interact with others	4.1, 4.3	• Selects and uses appropriate conventions and protocols when communicating with stakeholders in a range of work contexts
Get the work done	1.2, 2.1, 2.2, 2.5, 3.2-3.4	• Monitors workload in terms of personal and stakeholder goals and outcomes, adjusting or renegotiating priorities and plans as required • Develops plans for complex, high-impact activities with strategic implications that involve a diverse range of stakeholders • Implements actions according to a predetermined plan, making adjustments if necessary and addressing unexpected issues • Considers strategic and operational potential of digital trends to achieve work goals, and enhance work processes and solutions • Uses formal analytical and lateral thinking techniques for identifying issues, generating and evaluating possible solutions • Uses formal decision-making processes as scaffolding for thinking, seeking input, advice and feedback from others as required

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Unit Mapping Information

Code and title **current version**	**Code and title** **previous version**	**Comments**	**Equivalence status**
ICTTEN809 Analyse business specifications to produce technical solutions	ICTTEN7227B Analyse business specifications to produce technical solutions	Updated to meet Standards for Training Packages. Recoded and minor changes to element and PC's to meet AQF requirements.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN809 Analyse business specifications to produce technical solutions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- research and critically analyse client specifications against accepted industry practices
- produce technical solutions from business specifications
- analyse feedback from client and make adjustments to proposal
- apply design concepts to business solutions
- produce technical reports regarding design of the solution
- make recommendations and offer optimum design solutions
- produce an evaluation document on impact of technical requirements on the business.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline business models and tools
- summarise business processes
- explain client business domain, business function and organisation
- explain compatibility issues and resolution procedures
- explain configuration of internet protocol (IP) networks
- establish customer and business liaison protocols
- summarise desktop applications and operating systems
- provide a detailed explanation of documenting technical specifications
- explain linkage between processes
- summarise security protocols, standards and data encryption
- outline technologies:
  - access networks

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- core networks
- information and communications technology (ICT) network topologies
- mobile cellular networks
- network protocols and operating systems
- optical networks and principles
- radio frequency (RF) networks and principles.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the Telecommunications – Telecommunications Networks Engineering field of work and include access to:

- client functional requirements
- business specifications
- database software
- simulation software
- organisational guidelines
- network and computer layout
- site design software and hardware
- information on a range of ICT business solutions.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN810 Investigate the application of cloud networks in telecommunications switching

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to develop strategies to accommodate shortfalls in capacity and functionality for a switching network. It also covers how to develop solutions for network growth using emerging technologies, including cloud computing.

It applies to individuals with excellent technical and strategic management skills working as telecommunications planning engineers and senior technical staff.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Evaluate current physical network infrastructure	1.1 Analyse scalability, functionality, cost, security and energy consumption of existing physical network infrastructure 1.2 Report on shortfalls and risks of existing physical infrastructure in accommodating network growth and increased functionality 1.3 Investigate capacity and functionality shortfalls of existing physical infrastructure to highlight limitations of the existing

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ELEMENT	PERFORMANCE CRITERIA
	switching network 1.4 Document estimated costs and issues associated with meeting capacity and functionality shortfalls using existing physical infrastructure
2. Investigate the application of cloud networks	2.1 Analyse trends in cloud networks (infrastructure-as-a-service), technologies and multiprotocol label switching (MPLS) architectures against rapid changes in the landscape 2.2 Determine applicability of cloud networks (infrastructure-as-a-service) to meet capacity and functionality requirements of the network 2.3 Assess risks in using cloud networks to meet capacity and functionality requirements of the network 2.4 Evaluate a range of cloud network solutions and justify selection of an optimum network switching solution 2.5 Develop solution elements using a series of small project elements 2.6 Produce a cloud network alternative solution to emulate the existing core network of a service provider
3. Analyse the impact of the cloud network solution for system integration and across business domains	3.1 Prepare a plan for organisational change control processes and integration of cloud network solutions within a complete network infrastructure 3.2 Prepare a test scenario and produce a test management schedule for the testing process of system elements and interfaces using simulation 3.3 Use integration document software to replicate issues exhibited in test environment 3.4 Certify cloud network solution compatibility and compliance to requirements using the web-based test management tool (quality centre) to conduct performance evaluation tests 3.5 Analyse test reports to evaluate load balancing and network security issues in test environment 3.6 Document and resolve conflicts detected in simulation testing
4. Develop a business case for implementation of a cloud network	4.1 Prepare a cost-benefit analysis of the cloud network solution as a business case to evaluate the return on investment (RoI) 4.2 Investigate staging of the solution and timing implementation of project elements as a scenario for real life implementation 4.3 Research and report on key features of cloud network

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ELEMENT	PERFORMANCE CRITERIA
	implementation in a business case study

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 2.1, 3.5, 4.3	• Researches, evaluates and interprets complex technical documentation, such as software and hardware manuals and design specifications
Writing	1.2, 1.4, 3.1, 3.2, 3.6, 4.1, 4.3	• Prepares clear and concise workplace documentation, including reports and recommendations incorporating technical language, to communicate complex information
Numeracy	1.1, 1.3, 1.4, 3.5, 4.1	• Uses numerical information to interpret results, evaluate different types of technical data, take measurements and determine cost-effective outcomes for RoI
Get the work done	1.1, 1.3, 1.4, 2.1-2.5, 3.1-3.4, 3.6, 4.2	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context for complex, high-impact activities with strategic implications • Implements actions according to a predetermined plan, making adjustments if necessary • Takes responsibility for high-impact decisions in complex situations involving many variables and constraints • Uses formal, analytical and lateral thinking techniques to resolve problems or to generate ideas • Actively identifies digital systems, devices and applications with potential to meet current and/or future needs • Uses main features and functions of digital tools to complete work tasks

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTTEN810 Investigate the application of cloud networks in telecommunications switching	ICTTEN8194A Investigate the application of cloud networks in telecommunications switching	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN810 Investigate the application of cloud networks in telecommunications switching

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- evaluate the current physical network infrastructure's capacity and functionality shortfalls
- investigate application of cloud networks and plan architectural design
- develop components of cloud networking solution for meeting capacity and functionality requirements of the network
- assess risks in using cloud networks to meet capacity and functionality requirements of the network
- analyse impact of integration of cloud network solution on network
- prepare a test plan with test scenario and produce a test management schedule
- use integration document and software test management tools to replicate issues exhibited in test environment
- certify cloud network solution compatibility and compliance
- prepare a cost-benefit analysis of the cloud network solution
- develop a business case for implementation of a cloud network.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- analyse components of infrastructure-as-a-service solutions
- summarise existing digital switching technology in service provider's core network
- outline information required to develop architectural solutions
- explain *integration document software*
- explain new cloud network technologies
- provide a detailed summary of cloud networking transmission, transmitter and receiver architecture and their associated infrastructure

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- outline performance and integration requirements
- prepare and/or interpret technical documentation
- outline protocols as used on multiprotocol label switching (MPLS) and infrastructure-as-a-service
- provide a detailed explanation of network components and their functions
- explain specific organisational requirements relating to computer systems
- summarise typical issues and challenges that occur with system changes.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- a site where the application of cloud networks in telecommunications switching may be investigated
- software tools currently used in industry
- vendor products, specifications, equipment and enterprise policy required for the activity.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN811 Evaluate and apply network security

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to evaluate security of information communications technology (ICT) networks, using converging switching and transmission technologies in local area networks (LAN) and wide area networks (WAN), broadband networks, internet protocol TV (IPTV) and virtual networks.

It applies to individuals with excellent communication and IT skills working as telecommunications engineers.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Analyse operation of the internet	1.1 Evaluate the interrelationship of IP to open systems interconnect (OSI) seven layer model and the impact on network topologies and network elements 1.2 Assess media access control (MAC) and IP addressing, and their application in security 1.3 Report on transmission control protocol/internet protocol

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ELEMENT	PERFORMANCE CRITERIA
	(TCP/IP) operations and use of transport protocols for transmitting data over the network 1.4 Examine various types of routing protocols and the implications on security 1.5 Analyse forms of label switching as applied to data packets 1.6 Use software to simulate least-cost algorithms
2. Analyse internetwork protocols	2.1 Compare connection-oriented and connection-less networks in internetworking applications 2.2 Research design parameters used in networks 2.3 Produce a report on IP multi-casting protocols and systems, including IP frame fields of data frames
3. Research and report internetwork operations	3.1 Analyse protocol considerations of voice over internet protocol (VoIP) 3.2 Research protocols G723.1, G729 and G729A standards and evaluate their application in internetworking 3.3 Determine the format of JPEG and GIF files as applied to still pictures 3.4 Determine the format of MPEG-2 and H.32x series multimedia protocols for motion pictures 3.5 Evaluate features of different of multi-service protocols and of different email system protocols in networking operations 3.6 Produce a report on features different web-based protocols used in internetworking operations
4. Analyse features and types of network security	4.1 Analyse procedures and processes used for security attacks and use of protection mechanisms 4.2 Research conventional encryption algorithms and determine possible locations of encryption devices 4.3 Produce a report on conventional encryption key distribution problems and how message authentication and verification is achieved 4.4 Research one-way hashing and secure hashing functions 4.5 Produce a report on digital signature standard (DSS) principles, including public key cryptography algorithms for network security
5. Research features of public key authentication and email network	5.1 Research public key authentication using Kerberos 5.2 Analyse how electronic mail security is achieved using pretty good privacy (PGP)

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ELEMENT	PERFORMANCE CRITERIA
security protocols	5.3 Research and report on internet protocol security (IPSec) 5.4 Produce a report on encapsulating security payload (ESP), including internet key management processes
6. Research features of web, network management and system security	6.1 Analyse how web threats and attacks occur in an IP network and determine system intruders and threats 6.2 Research operation of transaction protocols 6.3 Evaluate processes used for selection and protection of system passwords 6.4 Evaluate system threats and methods used to counteract the threats 6.5 Produce a report on anti-virus protection strategies, including firewall design principles, types and configurations
7. Document evaluation report	7.1 Present a final report to include research and evaluation of network security management principles and network application in the workplace with enhancement recommendations

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	2.2, 3.2, 4.1, 4.2, 4.4, 5.1, 5.3, 6.2-6.4	• Researches, evaluates and interprets complex technical documentation, such as technical standards
Writing	1.3, 2.3, 3.6, 4.3, 4.5, 5.3, 5.4, 6.5	• Prepares clear and concise workplace documentation, including reports and recommendations incorporating technical language, to communicate complex information clearly and effectively
Numeracy	1.6, 4.2, 4.5	• Uses mathematical subtlety and a clear set of steps to solve public-key encryption and least-cost algorithms
Interact with others	7.1	• Selects and uses appropriate conventions and protocols to communicate findings to stakeholders in a range of work contexts
Get the work done	1.1-1.6, 2.1, 2.3, 3.1-3.5, 4.1, 4.2, 4.4,	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context for complex, high-impact activities with strategic

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	5.1, 5.2, 6.1, 6.3, 6.4	implications • Implements actions according to a predetermined plan, making adjustments if necessary • Takes responsibility for high-impact decisions in complex situations involving many variables and constraints • Uses formal, analytical and lateral thinking techniques to resolve problems or generate ideas • Actively identifies digital systems, devices and applications with potential to meet current and/or future needs • Uses main features and functions of digital tools to complete work tasks

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN811 Evaluate and apply network security	ICTTEN8195B Evaluate and apply network security	Updated to meet Standards for Training Packages. Minor change to performance criteria for clarity	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN811 Evaluate and apply network security

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- investigate and report on protocols used for data transmission over IP networks
- investigate and report on network security in terms of internet protocols, digital signature standard (DSS) principles and asymmetric key cryptography on IP networks
- research and report features of web, network management and system security management in IP networks
- recommend enhancements to security management in IP networks.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain administrative network management systems
- evaluate algorithms used in IP network security
- specify the purpose of cryptography in security systems
- explain encapsulation and encryption in data transmission
- describe examples of enterprise solutions
- explain firewalls
- outline common network topologies
- summarise operations network management systems
- explain routing theory
- explain and give examples of system threats
- outline transaction protocols.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- a telecommunications operations site
- a mentor or supervisor appropriately experienced in relevant telecommunications technology and infrastructure
- networked computers and relevant software.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN812 Evaluate and apply digital signal processing to communications system

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to analyse, apply and simulate operation of digital signal processing (DSP) to signals in a telecommunications system.

It applies to individuals with excellent information technology (IT) and design skills working as field officers. They develop solutions in modern applications, such as internet protocol TV (IPTV), digital TV, fast broadband and internet applications.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Apply DSP design criteria to telecommunications system	1.1 Review DSP criteria applied to signal processing 1.2 Perform frequency domain analysis on telecommunications signals 1.3 Apply digital processing techniques to DSP baseband communications signals used in digital systems 1.4 Generate output of a comb filter in digital filtering application

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ELEMENT	PERFORMANCE CRITERIA
	using convolution theorem and autocorrelation
2 Determine linear time invariant (LTI) system properties	2.1 Simulate telecommunication entities using simulation software functions 2.2 Perform calculations to find numerical approximations of the continuous-time convolution process 2.3 Simulate echo cancellation by applying simulation software using adaptive DSP algorithms and an inverse filtering method
3 Analyse digital telecommunication signals processing	3.1 Analyse the result of digitally passing a signal through a first-order recursive discrete-time filter 3.2 Determine frequency response of a simple continuous-time system using Fourier transform 3.3 Analyse amplitude modulated signals using Fourier transform
4 Analyse time and frequency forms of signals by applying simulation of signal processing	4.1 Program a simulated software application to represent a comb filter with a signal applied from a telecommunications system 4.2 Produce a report analysing simulated output results and relevance of a DSP filter to a telecommunications system

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1	• Researches, evaluates and interprets complex technical documentation
Writing	4.2	• Prepares clear and concise workplace documentation including reports that incorporate technical language to communicate complex information clearly and effectively
Numeracy	1.2, 1.4, 2.2, 2.3, 3.1-3.3	• Performs a range of complex, algorithmic calculations and analyses • Analyses and synthesises highly embedded mathematical information in a broad range of tasks and texts
Get the work done	1.1-1.4, 2.1, 2.3, 3.1-3.3, 4.1	• Uses a mix of intuitive and formal processes to identify key information and issues, evaluate alternative strategies, anticipate consequences and consider

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		implementation issues and contingencies • Takes responsibility for high-impact decisions in complex situations involving many variables and constraints • Uses advanced features and functions of digital tools to complete work tasks

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN812 Evaluate and apply digital signal processing to communications system	ICTTEN8196A Evaluate and apply digital signal processing to communications system	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN812 Evaluate and apply digital signal processing to communications system

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- apply digital signal processing (DSP) criteria to a telecommunications system
- evaluate linear time invariant (LTI) system properties
- analyse digital and amplitude modulated signals using DSP methods and principles
- demonstrate an awareness of radio frequency issues relevant to DSP processes
- report on finding of analysis and use of DSP in a telecommunications system.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- summarise digital communications systems
- explain Fourier transforms
- explain linear time invariant (LTI)
- explain various modulation methods, amplitude (AM), frequency (FM), phase (PM) and digital formats
- explain organisational policy and procedures for digital signal processing
- outline common non-compliance issues and responses.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- a telecommunications operations site

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- digital communication systems
- simulation software
- telecommunications test equipment currently used in industry.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN813 Produce engineering solutions using numerical computations and simulation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to design and evaluate systems and networks to resolve specialised telecommunications network problems.

It applies to individuals who analyse, calculate and solve complex mathematical engineering problems for advanced telecommunication systems requiring numerical simulation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Use advanced engineering mathematics for a range of complex engineering solutions	1.1 Solve mathematical functions using complex trigonometric ratios 1.2 Solve mathematical functions using manipulation of matrices and determinants to perform standard calculations 1.3 Solve trigonometric functions using operations on complex numbers

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Solve complex functions using integral and differential calculus 1.5 Solve mathematical functions using ordinary differential equations (ODE) 1.6 Solve mathematical equations using Laplace transforms 1.7 Solve mathematical problems using algorithmic control structures 1.8 Use software simulations where possible to produce simulated calculations for a range of engineering solutions 1.9 Analyse results from the simulated solution and compare to the derived solutions to adjust any variables in the calculation process
2. Design a simulation control system with queues	2.1 Design a simple control system using simulation software 2.2 Design a queuing system using simulation software 2.3 Design a stochastic system using simulation software 2.4 Document and present all numerical software simulations for the engineering problems

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Writing	2.4	• Prepares clear and concise workplace documentation that incorporates technical language to communicate complex information clearly and effectively
Numeracy	1.1-1.9	• Uses a range of advanced mathematical skills to perform a variety of complex engineering solutions and interpret complex measurement data
Get the work done	1.8, 2.1-2.3	• Uses a mix of intuitive and formal processes to identify key information and issues, evaluate alternative strategies, anticipate consequences and consider implementation issues and contingencies • Takes responsibility for high-impact decisions in complex situations involving many variables and constraints • Uses main features and functions of digital tools to

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		complete work tasks

Unit Mapping Information

Code and title **current version**	**Code and title** **previous version**	**Comments**	**Equivalence status**
ICTTEN813 Produce engineering solutions using numerical computations and simulation	ICTTEN8197A Produce engineering solutions using numerical computations and simulation	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN813 Produce engineering solutions using numerical computations and simulation

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- solve a range of complex mathematical functions related to telecommunications engineering
- use software systems to produce simulations of mathematical solutions
- analyse results of software simulations
- design telecommunications systems using software simulations
- document and present software solutions for engineering problems.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- analyse and manipulate functions using symbolic and numerical software, including operations of entering and manipulating polynomials in suitable software and then substitution of values and graphing
- analyse and manipulate matrices and determinants, numerically with and without symbolic and numerical software
- design and debug programs using algorithmic control structures and output results to the screen, a graph and a file
- analyse and manipulate complex numbers numerically and with symbolic software
- determine and manipulate equations using advanced calculus operations of differentiation and integration numerically and with symbolic software
- determine and manipulate equations of the type called ordinary differential equations (ODE) met in telecommunications engineering applications numerically and with symbolic software

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- determine and manipulate Laplace transforms met in telecommunications engineering applications numerically and with symbolic software
- design a simulation control system and simulate queues using software.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- networked computers
- simulation software
- relevant documentation
- a range of industry scenarios or workplace examples.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN814 Manage development and application of testing artefacts

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to plan and manage a test regime by developing testing artefacts to evaluate application software for a telecommunications network.

It applies to individuals working as network engineers or senior technical staff within project management roles, and includes technologies in mobile phones, wireless modems, set top boxes, media centres, web applications and content servers using application software to provide a telecommunications service.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan the test effort and develop test strategy for software testing	1.1 Critically analyse functionalities of an application software from the system design document and create a test strategy for a new telecommunications product line 1.2 Produce steps in developing test strategy and attributes of each

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ELEMENT	PERFORMANCE CRITERIA
	step, according to enterprise policy 1.3 Produce a test strategy to evaluate suitability of application software for integration into the telecommunications network 1.4 Assess a range of tests required to evaluate performance and functionality of application software and determine tests required to suit the test regime 1.5 Evaluate features of testing tool and debuggers, and select an appropriate tool to test the software application and detect faults 1.6 Produce a test plan based on requirements of the project specifications, and identify testing artefacts required for model-based software testing
2. Plan the development of testing artefacts	2.1 Develop software testing strategies for uncovering evidence of defects in software systems as part of the quality assurance process 2.2 Produce a test dependency model of the relationship between the test regime and test levels in software testing for referencing and validation 2.3 Critically analyse software testing requirements to determine domain testing and application testing artefacts requirements to validate the software product
3. Develop and manage testing artefacts	3.1 Create reusable domain artefacts to detect early defects in domain testing 3.2 Modify domain test artefacts by binding variability to create application test artefacts to detect defects in product line applications 3.3 Produce test reporting associated with test cycle phases within the test plan 3.4 Critically analyse test reports and evaluate the impact of the test plan with testing artefacts on the testing environment 3.5 Manage progress of the test plan to minimise risks associated with testing and ensure the test complies with test requirements 3.6 Report detected defects to product evaluation personnel and prepare a strategy to manage defects 3.7 Critically analyse testing metrics produced by the test tool to manage tracking of defects, and use metrics to plan process improvements 3.8 Produce an evaluation report from the traceability matrix to manage defects or failures from the test plan

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 1.6, 2.3, 3.3, 3.4	• Organises, evaluates and critiques ideas and information from a wide range of complex texts
Writing	1.3, 1.6, 3.3, 3.6, 3.8	• Prepares clear and concise workplace documentation, including reports and recommendations incorporating technical language, to communicate complex information
Numeracy	3.4, 3.7	• Uses numerical information to interpret and evaluate different types of technical data and take measurements
Interact with others	3.6	• Selects and uses appropriate conventions and protocols when communicating with technical personnel in a range of work contexts
Get the work done	1.1-1.5, 2.1-2.3, 3.1, 3.5	• Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context for complex, high-impact activities with strategic implications • Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world and uses this to devise strategies • Implements actions according to a predetermined plan, making adjustments if necessary • Takes responsibility for high-impact decisions in complex situations involving many variables and constraints • Uses formal, analytical and lateral thinking techniques for resolving software, hardware and logistics problems

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTTEN814 Manage development and application of testing artefacts	ICTTEN7226A Manage development and application of testing artefacts	Updated to meet Standards for Training Packages.	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN814 Manage development and application of testing artefacts

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- produce steps in developing test strategy
- produce a test strategy to evaluate suitability of application software
- develop software testing strategies for uncovering evidence of defects in software systems
- create reusable domain artefacts to detect early defects in domain testing
- produce test reporting associated with phases of a test cycle within the test plan
- produce an evaluation report from the traceability matrix.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline applications' software features and functionalities
- specify the configuration of software testing tools
- define *software artefact* and explain the process for testing artefacts
- summarise creation of the traceability matrix
- summarise steps in developing the test strategy and specify various tests that may be applied
- outline domain and application testing
- explain essential elements of test plans
- evaluate features of testing tools and debuggers
- explain the identification of types of risks
- outline the management of:
  - software defects
  - test traceability

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- explain phases of test cycles
- summarise production of test reviews
- outline steps in developing a test strategy
- explain testing procedures.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- a site where testing artefacts can be developed and applied
- software tools currently used in industry
- vendor products, specifications, equipment and enterprise policy required for the activity.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN815 Manage project requirements and process implementations

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to analyse forecast data, develop specifications and resource requirements, and plan implementation of the process solution for products and services.

It applies to individuals with excellent planning and organising skills, working as network engineering staff or senior technical officers within project management roles, who have authority to direct activities of implementation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Manage forecast service demand requirements	1.1 Develop a project plan to review forecasting data and generate planning forecasts using forecasting tools 1.2 Critically analyse and review forecasts according to enterprise policy and produce forecast figures considering new developments in the area and technological changes where appropriate

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ELEMENT	PERFORMANCE CRITERIA
2. Manage network development growth requirements	2.1 Critically analyse market intelligence on customer demand and demand data to plan for potential network traffic quantity and flow 2.2 Assess overall planning parameters, including approved business plan prior to commencing the planning process 2.3 Critically analyse gathered information and produce a project plan with specifications to meet network growth
3. Manage project resource requirements	3.1 Assess resource requirements to manage the project from the scoping phase through to project completion 3.2 Critically analyse outcomes of the project deliverables to determine effectiveness of the project process
4. Develop process solutions	4.1 Produce requirements for process solutions for delivery of product and services to customers using forecasting demand data 4.2 Prepare a plan for the organisational change control process and integration of new solutions within a complete network infrastructure 4.3 Produce a test management schedule for the testing process of the product solution 4.4 Develop solution specifications using industry process according to design requirements 4.5 Develop software and hardware resource profiling and select a suitable vendor for negotiations 4.6 Complete configuration management and provide complex input design requirements
5. Critically analyse test results for process solutions	5.1 Use design document and integration document software to replicate issues exhibited in test environment 5.2 Certify software solution compatibility and compliance with requirements using web-based test management tool to conduct performance evaluation tests 5.3 Critically analyse test reports to evaluate compatibility and security issues in a test environment 5.4 Resolve complex issues in interface to isolate defects
6. Manage process implementation	6.1 Plan and prepare evidence for customer acceptance and certification 6.2 Plan and manage transition to operation activities required for transition to operation of integrated IP solution 6.3 Prepare an installation failures procedure to make changes while

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ELEMENT	PERFORMANCE CRITERIA
	maintaining service levels 6.4 Manage the change implementation plan to maintain system stability

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.2, 2.1-2.3, 3.2, 4.4, 5.3	• Organises, evaluates and critiques ideas and information from a wide range of complex texts
Writing	1.1, 1.2, 2.3, 4.1-4.4, 6.1, 6.3	• Demonstrates sophisticated writing skills by selecting appropriate conventions and stylistic devices to express precise meaning
Numeracy	1.2, 2.1, 3.1, 4.1, 5.3	• Analyses and synthesises highly embedded mathematical information in statistical data to apply forecasting techniques and assess planning parameters
Get the work done	1.1, 2.2, 3.1, 4.5, 4.6, 5.1, 5.2, 5.4, 6.1, 6.2, 6.4	• Operates from a broad conceptual plan, developing operational detail in stages, regularly reviewing priorities and performance during implementation, and identifying and addressing issues • Demonstrates a sophisticated understanding of the potential of new technology including principles, concepts, language and practices associated with the digital world • Takes responsibility for high-impact decisions in complex situations involving many variables and constraints • Uses formal, analytical and lateral thinking techniques to manage unexpected changes in demand requirements • Monitors outcomes of decisions, considering results from a range of perspectives, and identifying key concepts and principles and their impact on customers and enterprise

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTTEN815 Manage project requirements and process implementations	ICTTEN7228A Manage project requirements and process implementations	Updated to meet Standards for Training Packages.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN815 Manage project requirements and process implementations

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- manage forecast service demand requirements
- manage network development growth requirements
- manage project resource requirements
- develop process solutions following critical analysis of test results.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- evaluate principles of managing change and implications for managing a project
- summarise customer applications and usage levels
- outline forecasting tools and techniques, and specify data that contributes to forecasting
- explore various industry processes that impact project management strategy
- outline integration of new solutions
- explain market intelligence and its value to forecasting and project assessment
- explore various types of data used to evaluate demand
- summarise performance evaluation
- provide a detailed summary of planning procedures
- describe the limitations of compatibility on the integration of telecommunications solutions
- evaluate products and services embedded in a project
- define project management and evaluate a project management plan
- explain test management.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- forecast data and tools involved in planning
- a range of software and hardware currently used in industry
- relevant regulations and specifications that impact forecasting activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTTEN816 Scope project requirements and process solutions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to develop scope management strategies and plans, in line with business requirements and organisational strategies, for the delivery of products and services.

It applies to individuals with excellent planning and problem-solving skills, working as network engineering staff or senior technical officers within project management roles. They work with new and emerging technologies.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Conduct project scope definition activities	1.1 Develop and confirm procedures for project authorisation with an appropriate authority for commitment of resources and effort 1.2 Establish agreement of desired project outcomes with relevant stakeholders 1.3 Develop scope management plan to determine scoping requirements

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ELEMENT	PERFORMANCE CRITERIA
2. Define and plan scoping project requirements and process solutions	2.1 Critically analyse needs in consultation with client and relevant stakeholders to verify project scope 2.2 Prepare project specifications with project objectives, deliverables, constraints, exclusions, assumptions and principal work activities for delivery of products and services 2.3 Determine and agree measurable project outcomes and benefits to enable quantified evaluation of program performance 2.4 Develop and communicate scope definition, scope management strategies and plans to stakeholders, and seek agreement 2.5 Align program scope to business requirements and organisational strategy
3. Manage scoping process	3.1 Conduct regular program reviews to measure project performance and ensure stated program, business and strategic objectives are met 3.2 Establish and maintain the change management system to form the basis of ongoing scope management 3.3 Conduct reviews of scope changes and take action to ensure project and program objectives are achieved or modified 3.4 Measure project outcomes against defined program scope and aligned strategic objectives 3.5 Communicate results of program outcomes to appropriate authority 3.6 Manage the impact of scope changes within established time, cost and quality constraints according to change control procedures and to meet project objectives 3.7 Review the project planning process and document recommendations for improvements to future projects

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	3.4	• Organises, evaluates and interprets a range of complex documentation, including project plans

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Writing	1.3, 2.2, 2.4, 3.7	• Prepares clear and concise workplace documentation, including project briefs and reports incorporating technical language, to communicate complex information clearly and effectively
Oral Communication	1.1, 1.2, 2.1, 2.3, 2.4	• Uses highly developed listening, observational and questioning skills to understand others' perspectives, and clarify and explore meaning • Clearly articulates requirements using language appropriate to audience and environment
Numeracy	3.4, 3.6	• Analyses and synthesises mathematical information to assess project parameters, including budget requirements and limitations
Interact with others	1.2, 2.1, 3.5	• Selects and uses appropriate conventions and protocols when communicating with stakeholders in a range of work contexts • Collaborates with others to achieve joint outcomes, playing an active role in facilitating agreement
Get the work done	2.2, 2.3, 2.5, 3.1-3.3, 3.6, 3.7	• Operates from a broad conceptual plan, developing operational detail in stages, regularly reviewing priorities and performance during implementation, and identifying and addressing issues • Monitors outcomes of process and decisions made, considering results from a range of perspectives and identifying key concepts and principles that may be adaptable to future situations • Takes responsibility for high-impact decisions in complex situations involving many variables and constraints • Uses formal, analytical and lateral thinking techniques to resolve problems such as unexpected variations to requirements and control proposed changes in scope • Monitors outcomes of decisions, considering results from a range of perspectives and identifying key concepts and principles and their impact on customers and enterprise

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTTEN816 Scope project requirements	ICTTEN7230A Scope project requirements	Updated to meet Standards for	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
and process solutions	and process solutions	Training Packages.	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTTEN816 Scope project requirements and process solutions

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- prepare project specifications with project objectives
- develop scope management plan
- develop scope management strategies
- conduct regular program reviews
- measure project outcomes
- manage the impact of scope changes within established budget and timeline.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- examine a range of products, services and solutions as they apply to various project outcomes
- explore various stakeholders and relevant levels of authorisation required for the duration of a project
- explain project life-cycle and the significance of scope management
- outline scope management plans, methodologies, techniques and tools
- summarise typical challenges and issues encountered in project scope management and options for addressing them
- identify and explore various project performance indicators and how project performance can be measured
- evaluate various vendor products and solutions.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- sites on which projects may be conducted
- forecast data and tools involved in planning
- a range of software and hardware currently used in industry
- relevant regulations and specifications that impact forecasting activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB201 Use social media tools for collaboration and engagement

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to establish a social networking presence, using social media tools and applications. It includes the requirement to review, compare, and use different types of social networking tools and applications.

It applies to information and communications technology (ICT) personnel who need to develop a social networking web presence for a small or large office environment, using social media tools and applications.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Describe the different types of social media tools and applications	1.1 Explain the characteristics of the term ‘social media’ 1.2 Identify different types of social-media tools and applications 1.3 Illustrate some of the issues associated with the use of social media tools and applications

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ELEMENT	PERFORMANCE CRITERIA
2. Compare different types of social media tools and applications	2.1 Select one social media type to review 2.2 Review the most popular tools, and applications, within that social media type 2.3 Itemise the benefits across a range of the most popular tools and applications 2.4 Select the most appropriate social media tool or application
3. Set up and use, popular social media tools and applications	3.1 Identify the social media tools and applications available for possible implementation 3.2 Initiate the preferred social media tools, and applications, for use 3.3 Establish the social media interface, using text and file content 3.4 Initiate social networking interaction 3.5 Test and evaluate tools, and applications, for ease of use 3.6 Present the findings

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.2, 2.2	• Extract the relevant information from technical and organisational documents
Writing	1.1, 2.2, 2.3, 3.3, 3.4, 3.6	• Develop the content in a manner that supports and conveys information, using the appropriate structures and specialised language
Navigate the world of work	1.3	• Understands legal and ethical responsibilities, regarding the use of social media tools
Get the work done	2.1, 2.2, 2.4, 3.1, 3.2, 3.5, 3.6	• Makes routine decisions and implements standard procedures for routine tasks • Understands the purposes, specific functions, and the key features of common digital systems and tools, and operates them effectively to complete routine tasks

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Unit Mapping Information

Code and title **current version**	**Code and title** **previous version**	**Comments**	**Equivalence status**
ICTWEB201 Use social media tools for collaboration and engagement	ICAWEB201A Use social media tools for collaboration and engagement	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB201 Use social media tools for collaboration and engagement

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- identify different types of social media tools and applications, and the issues associated with their use
- access the internet, set up a social networking presence and upload and link a wide variety of files
- use and evaluate social media tools and applications.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- list basic technical terminology in relation to social networking, social media applications, and tools
- outline basic methods of uploading images, text files, portable document format (PDF) files, audio files, video files, and link the associated files
- state the features, and functions, of social media applications
- list import and export software functions
- explain how to link documents
- explain the process of tagging, in order to facilitate collaborative folksonomy
- list social media applications and procedures, for connecting to social networking sites
- identify and describe, input and output devices
- describe, and use, really simple syndication (RSS) feeds to connect a social network.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the website technologies field of work, and include access to:

- a personal computer (PC) and printer
- the internet
- social-media tools and applications
- online instructional documents.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB423 Ensure dynamic website security

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to ensure, and maintain, the security of a dynamic commercial website.

It applies to individuals working as website developers responsible for security of dynamic websites, who are proficient communicators and can analyse technical data capably and with efficiency.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Undertake the risk assessment	1.1 Identify the functionality and features of the website, and confirm these with the client 1.2 Identify security threats, with reference to the functionality of the site and organisational security policy, legislation and standards 1.3 Complete a risk analysis to prioritise the security threats, and identify system vulnerabilities

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Identify resource and budget constraints, and validate with the client as required 1.5 Source the appropriate products, security services and equipment, according to enterprise purchasing policies
2. Secure the operating systems	2.1 Identify operating system (OS) and cross-platform vulnerabilities 2.2 Make the appropriate scripting or configuration adjustments, with reference to the functionality of the site and the security policy 2.3 Identify and rectify weaknesses specific to the OS
3. Secure the site server	3.1 Configure the web server securely, with reference to the required functionality and the security policy 3.2 Review and analyse, server-side scripting with reference to the required functionality and the security policy 3.3 Install firewalls as required 3.4 Establish access control permissions to the server and database
4. Secure data transactions	4.1 Identify data transactions, with reference to the functionality and features of the website 4.2 Identify and apply, the channel protocols related to the requirements 4.3 Install and configure, the payment systems
5. Monitor and document the security framework	5.1 Develop a program of selective independent audits and penetration tests 5.2 Determine the performance benchmarks 5.3 Implement audit and test programs, and record, analyse and report the results 5.4 Make security framework changes based on the test results 5.5 Develop the site-security plan, with reference to the security policy and requirements 5.6 Develop and distribute, related policy and procedures to the client

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.3-1.5, 2.1, 2.3, 3.2, 4.1, 4.2, 5.4	• Reads and interprets plans, specifications, computer program interface, and other documentation from a variety of sources, and consolidates information to determine requirements
Writing	1.1, 1.3, 1.4, 2.2, 3.3, 4.3, 5.1, 5.2, 5.3, 5.5, 5.6	• Makes adjustments to software scripting, and creates procedural and related workplace documentation, for a specific audience, using clear and detailed language in order to convey explicit information
Oral Communication	1.1, 1.3, 1.4, 5.3, 5.6	• Uses listening and questioning skills to confirm understanding for technical, operational and business requirements, participates in a verbal exchange of ideas/solutions, and uses appropriate, detailed and clear language to address the client
Numeracy	1.4, 1.5, 4.3	• Undertakes numerical analyses during testing, and calculates, and evaluates system results and performance
Navigate the world of work	1.2, 1.5, 3.1, 3.2, 5.5	• Accepts responsibility and ownership of tasks, and makes decisions on completion parameters, and the need for coordination with others • Takes personal responsibility for following explicit and implicit policies, procedures and legislative requirements
Interact with others	1.1, 1.4, 5.6	• Selects and uses, the appropriate conventions and protocols, when communicating with clients and co-workers in a range of work contexts
Get the work done	1.1-1.5, 2.2, 2.3, 3.2-3.4, 4.3, 5.1-5.5	• Takes responsibility for planning, sequencing and prioritising tasks and own workload, for efficiency and effective outcomes • Makes routine decisions and implements standard procedures for routine tasks, using formal decision-making processes for more complex and non-routine situations • Addresses less predictable problems and initiates standard procedures in response to these problems, applying problem-solving processes in determining a solution • Uses familiar digital technologies and systems to access information, search and enter, data and code,

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		present information, and communicate with others, cognisant of data security and safety

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTWEB423 Ensure dynamic website security	ICAWEB423A Ensure dynamic website security	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB423 Ensure dynamic website security

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- determine the client security framework, and its requirements
- identify any potential security threats to a website, and document the risk and performance benchmarks
- develop and implement, strategies to secure a dynamic website.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- summarise the Australian Computer Society Code of Ethics
- explain a client business domain, its structure, function and organisation, including the organisational issues surrounding security
- identify and outline the legislation, regulations, and codes of practice pertinent to website information, including:
  - copyright
  - intellectual property
  - privacy
  - ethics
- outline current industry-accepted hardware and software products
- describe desktop applications and operating systems (OS), as they relate to website security
- explain the functions and features of:
  - automated intrusion detection software
  - authentication and access control

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    - common stored account payment systems
    - cryptography
    - common gateway interface (CGI) scripts
    - generic secure protocols
    - stored-value payment systems
- explain the implications of network address translation (NAT), related to:
    - securing internal, internet protocol (IP) addresses
    - buffer overruns and stack smashing
    - operating system deficiencies
    - the protocol stack for internet communications
    - physical web server security, particularly remote
- describe the advantages, and disadvantages, of using a range of security features
- identify and describe, host security threats.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the website technologies field of work, and include access to:

- a dynamic website
- a security plan
- the user requirements
- all relevant legislation, standards and organisational requirements.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB430 Produce server-side script for dynamic web pages

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Application

This unit describes the skills and knowledge required to produce server-side scripts for dynamic web pages using a range of relevant features from different languages.

It applies to individuals working as web designers who apply a wide range of knowledge and skills across different information and communications technology (ICT) environments to support organisations that require broad ICT support.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Analyse the requirements for web documents requiring server-side dynamic interaction	1.1 Review and assess user requirements with user to determine the necessary web document 1.2 Determine and document dynamic functionality of web document to meet user requirements 1.3 Determine appropriate language based on required dynamic functionality 1.4 Finalise web document requirements

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2. Design server-side scripts	2.1 Design web document and server-side code to interact with an external data source 2.2 Design web document and server-side code to allow administrator to insert, update, and delete entries to external data source 2.3 Implement security features in web document based on user requirements
3. Produce the web documents	3.1 Write extensible hypertext markup language (XHTML) in line with XHTML standards, to define web page structure 3.2 Write server-side scripts in line with XHTML standards to enable customised page content generation 3.3 Upload images to web-hosted database to enable dynamic retrieval for web page
4. Test the scripts and debug	4.1 Test web document and rectify issues to meet user requirements 4.2 Complete test results documentation and submit it to superior for discussion and acceptance
5. Set up security	5.1 Determine and implement permissions to prevent error messages displaying to the public 5.2 Configure server software to minimise potential database attacks

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	**Description**
Reading	• Identifies, analyses and evaluates workplace instructions and technical documentation, to determine all organisational requirements
Writing	• Develops clear and well-organised material for a specific audience, using precise language to convey explicit information requirements and recommendations
Oral Communication	• Clearly articulates requirements using the language appropriate to the audience, and participates in a verbal exchange of ideas/solutions
Navigate the world of work	• Identifies and complies with the current standards
Interact with	• Uses strategies to establish a sense of connection, and to build rapport,

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others	with clients and colleagues
Get the work done	• Takes responsibility for planning, sequencing and prioritising tasks and own workload, for efficiency and effective outcomes • Makes routine decisions and implements standard procedures for routine tasks, using formal decision making processes for more complex and non-routine situations • Uses familiar digital technologies and systems to access information, search and enter, data and code, present information and communicate with others, cognisant of data security and safety

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTWEB430 Produce server-side script for dynamic web pages	ICTWEB415 Produce server-side script for dynamic web pages	Updates to performance criteria and assessment requirements for clarity.	Equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB430 Produce server-side script for dynamic web pages

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements and performance criteria of this unit; including evidence of the ability to:

- Create a dynamic web page according to one set of user requirements
- Use server-side scripting to retrieve information from a web-hosted database in two different instances
- Analyse three language options and the associated advantages and disadvantages based on web document requirements to select most appropriate language
- Configure one webserver to deliver the website using HTTPS
- Create one script for each of the following:
  - inserting, updating, and deleting data from a web server database
  - implementing security features
  - uploading and retrieving images
  - managing sessions and creating secure logins
- Test web document and undertake corrective actions to meet requirements
-

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

- Server-side technologies and at least three web scripting languages and associated advantages and disadvantages
- Server-side web analysis and design parameters
- XHTML standards
- Testing tools and processes and associated advantages and disadvantages
- Control structures and object-oriented programming
- Web-programming concepts including:

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- the hypertext transfer protocol (HTTP) and HTTP Secure (HTTPS)
- stateless programming
- session management
- authentication and web security
- database vulnerabilities and preventative software configuration and programming practices

- Organisational procedures to document test results
-

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in an ICT working environment or workplace. This includes access to:

- Web-hosted database
- Server with software for configuration
- User requirements relating to web documents
- Software development environment
- XHTML standards
- Individual users as well as superior in the organisation

Assessors of this unit must satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWEB431 Create and style simple markup language documents

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Application

This unit describes the skills and knowledge required to design and create basic markup language documents and cascading style sheets (CSS) in order to define the structure and style of a website.

It applies to individuals in ICT roles who are required to create web pages with consistency in appearance and user experience.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Web

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Review the requirements	1.1 Review user requirements to determine website design 1.2 Develop testing approach and test cases based on requirements and refine with user 1.3 Select appropriate markup language based on user requirements
2. Create the document structure	2.1 Create and assign basic elements of documents based on user requirements

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	2.2 Mark-up sections of documents to depict structure and refine with user
3. Format, style and lay out the elements on a web page	3.1 Style and format documents using CSS according to user requirements 3.2 Lay out document elements using CSS according to user requirements
4. Test and validate the web pages	4.1 Test website in different browsers according to test approach and cases, and correct and re-test issues 4.2 Document test results and provide to user to explain any outstanding issues and corrective actions 4.3 Recommend, agree, and undertake any outstanding corrective actions with the user to achieve user acceptance

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	**Description**
Reading	• Identifies, interprets and uses information from technical and organisational documents to complete a work task
Writing	• Develops content in a manner that supports and conveys information, using the appropriate structures and specialised language • Uses specific software and technical language to create, format, review, save and access web-based documents, diagrams and images
Oral Communication	• Identifies work outcomes through open-ended questioning, active listening, paraphrasing and summarising • Uses clear and detailed verbal language in order to convey explicit information
Navigate the world of work	• Understands own role and responsibilities, and follows organisational standards • Completes work to user requirements and industry standards
Get the work done	• Sequences and schedules complex activities within the specified timeframe, monitors implementation, and manages relevant communication • Analyses documentation in order to apply and obtain desired results, and to resolve problems • Utilises a combination of lateral and analytical thinking, to design and refine solutions that are adaptable to different contexts • Uses a range of digitally-based technologies, and the software

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	packages and hardware required

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTWEB431 Create and style simple markup language documents	N/A	New unit	No equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWEB431 Create and style simple markup language documents

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements and performance criteria of this unit; including evidence of the ability to:

- Interpret and implement one set of user requirements, including the ability to
  - select markup language according to requirements
  - use a markup language without the automated generation of code
  - customise website style and layout according to user requirements
  - create consistent style and format using CSS across multiple documents on the web page
  - identify testing approach and test cases based on user requirements
  - develop a website style and format using cascading style sheets (CSS)
- Test website in at least two common browsers and take corrective action according to test results
-

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

- Markup languages and their associated standards, advantages, and disadvantages
- Standard web and CSS design principles
- Application of the following to CSS:
  - hypertext mark-up language (HTML)
  - extensible hypertext mark-up language (XHTML)
  - standards for design
- Hypertext transfer protocol (HTTP) and HTTP Secure (HTTPS)
- Testing tools and processes and associated advantages and disadvantages
- Troubleshooting processes relating to CSS and websites
- Features and limitations of common web browsers

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- Organisational procedures to document test results
-

Assessment Conditions

Skills must be demonstrated in a workplace or simulated environment where conditions are typical of those in an ICT working environment or workplace. This includes, but is not limited to:

- Software package
- Computer with internet connection
- User requirements relating to website
- Common web browsers to allow testing of website
- Individual users

Assessors of this unit must satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWHS201 Provide telecommunications services safely on roofs

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge to engage in safe work practices when installing or repairing telecommunications equipment on roof structures.

It applies to individuals employed as technicians and installers who are required to safely install or repair telecommunications equipment on roof structures. It includes planning, risk assessment and implementing control measures while undertaking telecommunications installation or repairs.

No licensing, legislative or certification requirements apply to this unit at the time of publication

Unit Sector

Telecommunications – Occupational Health and Safety

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Follow workplace procedures for hazard identification and risk control	1.1 Notify customer and arrange site access 1.2 Recognise and report hazards in the work area to designated personnel according to workplace procedures 1.3 Follow work health and safety (WHS) legislative requirements, workplace procedures and work instructions to control risks

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Comply with safe work practices for working safely on roofs and adhere to workplace environmental requirements throughout the work 1.5 Implement duty of care requirements to provide a safe working environment 1.6 Complete job safety analysis (JSA) sheets according to work requirements, including hazard identification and risk assessment 1.7 Use and maintain personal protective equipment and personal safety equipment according to work requirements and apply fall protection and personal safety requirements according to regulatory requirements
2. Prepare for work on rooftop	2.1 Assess scope of work according to workplace procedures, relevant legislation, codes, regulations and standards and relevant job information details 2.2 Inspect site to determine layout and equipment requirements according to work order 2.3 Select materials, tools and equipment, including personal protective equipment, and check for serviceability 2.4 Inspect and install fall protection and perimeter protection equipment, ensuring adequacy for work and conformance to regulatory requirements 2.5 Install roof safety system according to workplace and regulatory requirements 2.6 Select and install appropriate signage and barricades
3. Perform telecommunications work on rooftop	3.1 Inspect access from ground to work area ensuring it is safe and according to regulatory requirements 3.2 Estimate total weight of material to be raised to rooftop to carry out the work 3.3 Determine and use the safest lifting method to bring materials and equipment to rooftop according to regulatory requirements. 3.4 Secure test equipment, hardware and tools safely on rooftop and distribute weight to eliminate risk of damage to roof cover 3.5 Inspect safety system periodically for compliance with regulations according to workplace procedures and report faults 3.6 Monitor risk control measures to ensure they are effective and appropriate to the task and work environment 3.7 Reassess risk control measures as required, according to changed work practices or site conditions and make alterations within scope of authority

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ELEMENT	PERFORMANCE CRITERIA
4. Complete activities and documentations	4.1 Dismantle safety system according to prescribed sequence and remove from worksite 4.2 Clear work area and dispose of materials or recycle according to state and territory legislation and workplace procedures 4.3 Clean, check and maintain tools and equipment according to manufacturer's recommendations and workplace procedures 4.4 Complete documentation according to workplace requirements and notify customer for sign off

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	2.6	• Interprets textual information from sources to identify relevant safety signs
Writing	1.2, 1.6, 4.4	• Prepares documentation and correspondence using clear language, correct spelling and terminology in the preparation of reports, JSA, SWMS and other reports
Oral Communication	1.1, 1.2, 4.4	• Uses clear language and concepts, and tone and pace appropriate for the audience and purpose
Numeracy	3.2	• Performs mathematical calculations to estimate, interpret and confirm safe roof loading
Navigate the world of work	1.3-1.5, 1.7, 2.1, 2.4, 2.5, 3.1, 3.3, 3.6, 3.7, 4.1-4.3	• Complies with explicit policies and procedures. • Explores and implements, where identified, the implicit expectations of policies and procedures
Interact with others	1.1, 1.2, 4.4	• Identifies and takes steps to follow accepted communication practices and protocols • Uses a limited range of accepted practices for communicating in a work environment
Get the work done	1.1, 1.2, 1.4-1.7, 2.1-2.6, 3.1-3.4, 3.6, 3.7, 4.1-4.4	• Plans and implements routine tasks and workload making limited decisions on sequencing, timing and collaboration, and seeks assistance in setting priorities • Responds to predictable routine problems,

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		implementing standard or logical solutions

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTWHS201Provide telecommunications services safely on roofs	ICTOHS2080A Provide telecommunications services safely on roofs	Updated to meet standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWHS201 Provide telecommunications services safely on roofs

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of ability to:

- locate, interpret and apply relevant information, standards and specifications for working safely on roofs
- apply safety requirements throughout the work sequence, including the use of personal protective equipment
- provide for erection, maintenance and dismantling of the fall and perimeter protection requirements for the site
- carry out a risk assessment ensuring:
  - correct identification of risks and safety requirements
  - correct selection and use of appropriate processes, tools and equipment
  - completion of all work to specification
  - compliance with regulations, standards and organisational quality procedures and processes
  - open communication and the ability to work effectively and safely with others.

Note: As a minimum, given the plans and specifications for the roof working area of a corner, extending at least 4 metres in either direction and greater than 1.8 m high, incorporating harnesses and harness fixing points for safe personal and stores access to the roof, stores and equipment locations

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe the purpose of job safety analysis (JSA) and safe work method statements
- identify the various hazards associated with working on roofs
- identify levels of responsibility when operating in a hazardous situation
- specify workplace procedures relating to working on roofs

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- describe the hierarchy of control in a workplace health and safety environment in the context of:
  - hazards
  - risk
  - control
- list and describe common workplace practices that impact health and safety
- explain ‘duty of care’ and its relevance to workplace health and safety
- list and describe the use of safety personal protective equipment (PPE) and equipment used for working on roofs
- describe safe lifting methods
- explain reporting methods for safe work practices
- explain the nature of work undertaken on roofs
- list and apply processes of providing for safe working practices
- identify and comply with relevant statutory and regulatory authority requirements related to working safely on roofs
- identify and use roof safety equipment and systems and considerations to facilitate working safely on roofs
- apply SI system of measurement for measurement.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the Telecommunications – Occupational Health and Safety field of work and include access to:

- site on roof where operations may be conducted
- induction procedure and requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe working practices and addressing hazards and emergencies
- relevant regulations, standards specifications and manuals, including industry related systems information.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWHS202 Work safely in a radio frequency electromagnetic radiation environment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the performance outcomes, skills and knowledge required to use organisational risk control procedures when working with a risk of exposure to radio frequency (RF) electromagnetic radiation (EMR) hazards.

The unit applies to site maintenance staff, technicians and installers who install or maintain equipment at installations that are sources of RF EMR.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Unit Sector

Telecommunications – work health and safety

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to work in RF EMR environment	1.1 Identify characteristics of RF EMR and situations that can lead to exposure to RF EMR hazards 1.2 Identify potential effects of RF EMR on human body and contributing factors that affect it 1.3 Research relevant regulations and standards that apply to

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ELEMENT	PERFORMANCE CRITERIA
	working with and controlling RF EMR hazards 1.4 Obtain and review RF EMR information required for work environment
2. Assess RF EMR risks	2.1 Assess potential RF EMR hazards in telecommunications work environment 2.2 Estimate likely field strength pattern of potential RF EMR hazard
3. Control RF EMR risks	3.1 Explain typical organisational controls to manage and control identified RF EMR hazards 3.2 Choose and apply appropriate RF EMR controls 3.3 Report EMR exposure that exceeds acceptable levels according to organisational work health and safety (WHS) requirements

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.4, 2.1, 2.2, 3.1	• Uses a number of reading strategies to identify and interpret relevant information within familiar text types
Writing	3.3	• Prepares organisational WHS documentation using clear language, correct spelling and terminology
Oral Communication	3.3	• Uses clear language and concepts, and tone and pace appropriate for the audience and purpose
Numeracy	2.2	• Performs mathematical calculations to estimate, interpret and compare RF signal strength
Navigate the world of work	1.3, 1.4, 3.1-3.3	• Understands responsibility to comply with legal and regulatory requirements
Interact with others	3.3	• Identifies and takes steps to follow accepted communication practices and protocols
Get the work done	1.1-1.4, 2.1, 3.1, 3.2	• Follows clearly defined instructions and sequencing, and monitors own progress for the task, seeking assistance when necessary

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		• Makes low-impact decisions within familiar situations, based on a range of predefined or routine solutions • Responds to predictable routine problems and implements standard or logical solutions

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTWHS202 Work safely in a radio frequency electromagnetic radiation environment	ICTWHS2081A Work safely in a radio frequency electromagnetic radiation environment	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWHS202 Work safely in a radio frequency electromagnetic radiation environment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- identify the effect of radio frequency (RF) electromagnetic radiation (EMR) on the human body
- locate, interpret and apply relevant information, standards and specifications for working safely with RF EMR
- identify organisational controls for exposure to RF EMR, including lock-out procedures and the use of personal protective equipment
- identify risks and safety requirements and record in a job safety analysis (JSA) sheet or safe work method statement (SWMS) or similar record sheet
- select and use appropriate processes, tools and equipment to minimise RF EMR risk
- comply with regulations, standards and organisational procedures and processes
- communicate and work effectively and safely with others.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe the characteristics of RF EMR and sources of RF EMR, and state their effect on the human body
- describe the nature of work undertaken close to sources of RF EMR and identify the associated risks and hazards
- identify and summarise the regulations and standards that govern the generation of RF and EMR
- identify the relevant statutory and regulatory requirements relating to working safely with RF EMR
- describe the organisational control processes for managing exposure to RF EMR.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications – work health and safety field of work and include access to:

- induction procedures and requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- relevant regulations, standards, specifications and manuals, including industry related systems information.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWHS204 Follow work health and safety and environmental policy and procedures

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to follow safe working practices and environmental policy in the management of a telecommunications workplace.

It applies to telecommunications staff working under supervision in a technical environment and includes school based workers, entry-level workers, trainees and apprentices, and field officers deploying broadband access networks using optical technologies and other work on live systems.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Unit Sector

Telecommunications – work health and safety

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Identify work health and safety (WHS) legislative requirements	1.1 Locate WHS legislative requirements relevant to own work, role and responsibilities 1.2 Explain own responsibilities in relation to duty of care 1.3 Identify the relationship between legislative requirements and

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ELEMENT	PERFORMANCE CRITERIA
	safe work practices
2 Identify construction hazards and control measures	2.1 Identify basic principles of risk management 2.2 Identify common construction hazards 2.3 Identify measures for controlling hazards and risks
3 Follow workplace procedures for hazard identification and risk control	3.1 Recognise and report hazards in work area to designated personnel according to workplace procedures 3.2 Follow WHS legislative requirements, workplace procedures and work instructions to control risks 3.3 Comply with safe work practices 3.4 Implement duty of care requirements 3.5 Complete job safety analysis (JSA) sheets or safe work method statement (SWMS) according to work requirements, including hazard identification and risk assessment 3.6 Use and complete checks of personal protective equipment according to work requirements 3.7 Assess and test for harmful gases associated with workplace
4 Follow safety requirements for working with optical fibre equipment	4.1 Identify and use safe work practices when handling optical fibre, lasers and optical connectors according to the relevant Australian Standards 4.2 Identify and use safe working practices when handling and disposing of chemical waste
5 Identify and implement WHS communication and reporting processes	5.1 Apply WHS communication processes, information and documentation 5.2 Identify designated WHS personnel 5.3 Comply with safety signs and symbols 5.4 Identify procedures and relevant authorities for reporting emergencies, incidents and injuries
6 Follow WHS incident response procedures	6.1 Follow general procedures for responding to incidents and emergencies 6.2 Identify procedures for accessing first aid 6.3 Select and use relevant personal protective equipment 6.4 Explain and apply workplace procedures for fire safety
7 Contribute to management of WHS	7.1 Raise WHS issues with designated personnel according to workplace procedures and relevant WHS legislation

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ELEMENT	PERFORMANCE CRITERIA
	7.2 Contribute to participative arrangements for WHS management in workplace, within organisational procedures and scope of responsibilities and competencies
8 Contribute to management of workplace environmental issues	8.1 Raise environmental issues with designated personnel according to workplace procedures and relevant environmental requirements and legislation 8.2 Contribute to participative arrangements for environmental management in workplace, within organisational procedures and scope of responsibilities and competencies 8.3 Record and report all WHS issues, risks and hazards to designated personnel
9 Identify and respond appropriately to asbestos containing materials (ACM) hazards	9.1 Identify asbestos containing materials (ACM) hazards or their likelihood 9.2 Respond to asbestos containing materials hazards or their likelihood 9.3 Report identified or suspected asbestos containing materials hazards to designated personnel according to workplace procedures
10 Identify minor traffic management	10.1 Assess traffic safety requirement of general location with respect to regulatory and enterprise requirements 10.2 Identify safe work zone around vehicle and work space using traffic cones and signs according to regulatory requirements 10.3 Identify changed traffic conditions and act in accordance
11 Recognise and respond appropriately to confined space	11.1 Identify confined space in accordance with regulatory or enterprise guidelines that can only be entered by personnel with specialist training 11.2 Refer identified confined space to appropriate personnel

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.3, 4.1, 5.4, 6.1-6.4	• Analyses and consolidates information and data from a range of sources, against

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		defined criteria and requirements, to identify safety requirements
Writing	1.1, 3.1, 3.5, 7.1, 7.2, 8.1-8.3, 9.3, 11.2	• Accurately records information and prepares documentation using clear language and organisational formats and protocols
Oral Communication	1.1, 7.1, 7.2, 8.1-8.3, 9.3, 11.2	• Uses clear language and concepts, and tone and pace appropriate for the audience and purpose
Navigate the world of work	1.1-1.3, 2.1-2.3, 3.1-3.6, 4.1, 5.1, 5.3, 5.4, 6.4, 7.1, 7.2, 8.1, 8.2, 9.3, 10.2, 11.1	• Builds an understanding of personal roles and responsibilities for work • Explores and implements, where identified, the implicit expectations of policies and procedures • Understands rights and responsibilities, and complies with legal and regulatory requirements
Interact with others	1.1, 7.1, 7.2, 8.1- 8.3, 11.2	• Complies with work instructions and contributes to work group discussions using accepted conventions • Recognises common differences in other people and implements basic strategies to address own reaction to these differences
Get the work done	1.1-1.3, 2.1-2.3, 3.1, 3.4-3.7, 4.1-4.2, 5.1-5.4, 6.1- 6.4, 9.1, 9.2, 9.3, 10.1-10.3, 11.1	• Follows clearly defined instructions and sequencing, and monitors own progress for the task, seeking assistance when necessary • Makes low impact decisions within familiar situations, based on a range of predefined or routine solutions • Identifies ideas for other applications and considers them in current contexts • Responds to predictable routine problems and implements standard and logical solutions

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status

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Code and title current version	Code and title previous version	Comments	Equivalence status
ICTWHS204 Follow work health and safety and environmental policy and procedures (release 2)	ICTWHS204 Follow work health and safety and environmental policy and procedures (release 1)	Updates to correct numbering in performance criteria	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWHS204 Follow work health and safety and environmental policy and procedures

Modification History

Release	Comments
Release 2	This version first released with ICT Information and Communications Technology Training Package Version 3.1. Release created to correct numbering in performance criteria.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- identify and apply the work health and safety (WHS) legislative and safety requirements for construction work
- identify the range of common construction hazards and procedures for the assessment of risk and application of the hierarchy of control
- apply WHS communication processes, information and documentation
- contribute to the WHS committees and support representatives
- recognise the common safety signs and symbols
- identify and apply procedures for reporting hazards, incidents and injuries
- identify and apply the general procedures for responding to incidents and emergencies, including evacuation, first aid, fire safety equipment and personal protective equipment
- recognise and report hazards to designated personnel
- follow workplace procedures necessary to control risks in the workplace
- recognise the safe handling procedures for optical fibres and laser sources.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

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- describe the relevant Commonwealth, state and territory WHS legislation, regulations, codes of practice, and industry standards and guidance notes relevant to own workplace, role and responsibilities
- describe the differences between Commonwealth, state and territory WHS legislation and regulations
- identify and describe the common construction hazards
- identify different types of asbestos containing materials (ACM) (via photographs) and common sources of asbestos containing materials (ACM) found in the work environment and describe the controls required to mitigate risk
- identify the general construction work activities that require licences, tickets or certificates of competency
- identify and discuss the information and documentation used to maintain and inform on safe work practices
- explain the purpose of environmental control processes for the following:
  - air quality management
  - disposal and handling of hazardous and dangerous substances
  - noise pollution
  - safe disposal of fibre offcuts
  - stormwater and materials spillage
  - waste disposal
- describe the WHS responsibilities and rights of duty holders and workplace parties under environmental and WHS legislation, regulations and codes of practice, including:
  - persons in control of construction work and/or projects
  - employers and self-employed persons
  - persons in control of a business or undertaking (PCBU) and officers
  - supervisors
  - employees and workers
  - designers
  - inspectors
  - manufacturers and suppliers
- describe how individuals engage and participate in WHS activities in the workplace
- list the safety implications of working with optical fibres and equipment including:
  - hazards relating to handling of optical fibre and laser light source in the workplace
  - injuries that may occur:
    - damage to retina from lasers
    - damage to lungs from inhalation of fibre offcuts and particles
    - needle stick injury from fibres and offcuts
  - laser warning signs and labels relating to optical fibre components and equipment
  - safety requirements when handling and working with:
    - devices
    - laser light sources

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    - optical fibre connectors
    - optical fibres
    - patchcords
- state the personal responsibilities in complying with safe work practices including those relating to:
    - housekeeping
    - identification of hazards
    - preventing bullying or harassment
    - smoking
    - use of amenities
    - use of drugs and alcohol
- discuss the principles of risk management (including hazard identification, risk assessment and control) for construction work
- state ways in which WHS is managed in the workplace, and activities required under WHS legislation including:
    - hazard identification
    - hazards that exist in the workplace
    - WHS instruction
    - preferred order of ways to control risks (known as the hierarchy of control)
    - risk assessment and controls
    - role of WHS committees and representatives
    - training and provision of WHS information
    - types of common personal protective equipment and fire safety equipment
    - types of WHS information and documentation
- describe the workplace environmental and WHS procedures relevant to various types of work being undertaken, including procedures for:
    - designated personnel responsible for WHS
    - employee and worker participation in WHS management
    - general first aid response requirements
    - general workers compensation and injury management
- describe the procedure for recognising, reporting and responding to WHS for:
    - accidents
    - dangerous occurrences
    - emergencies
    - hazards
    - incidents
    - injuries
    - fires
    - near misses
    - evacuation procedures

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- identify and describe the function of WHS communications processes within an organisation
- discuss the purpose and process for completing job safety analysis or safe work method statements
- describe the meaning of WHS symbols found on signs and labels in the workplace
- describe the work operations to control risks
- explain the process of traffic control for a single vehicle
- describe the risks associated with confined spaces and harmful gasses, and explain the appropriate responses.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications – work health and safety field of work and include access to:

- relevant WHS legislation, regulations and codes of practice
- WHS implementation resources, such as sample forms, signs and procedures
- enterprise WHS policies and procedures
- personal protective equipment
- first aid equipment
- fire safety equipment
- relevant work areas for identification of hazards and control measures
- optic fibre cabling and equipment.

Note: Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Refer to the ICT Implementation Guide Companion Volume for recommended assessor details.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWOR301 Organise resources

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to organise resources for a telecommunications project in a client environment, including preparing and evaluating tenders, organising equipment and labour resources, and client training.

It applies to individuals who may be involved in assessing installation requirements, planning and performing installations, testing installed equipment and fault finding. It involves a degree of autonomy and may include limited supervision of others.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – workplace effectiveness

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Organise for third party supply	1.1 Develop specifications and company criteria for material supply and purchasing, and include in appropriate tender documents 1.2 Prepare tender documents according to company policy 1.3 Identify likely material suppliers and invite to tender and supply

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	1.4 Evaluate and accept tenders as appropriate to company policy 1.5 Negotiate price and conditions of purchase to company guidelines and satisfaction
2. Organise supply of equipment and material	2.1 Develop specifications detailing types and quantities of equipment and material 2.2 Notify supplier to deliver equipment and material to designated location within specified timeframe
3. Organise client training	3.1 Ascertain detail of training required from client and establish timeframe for client training 3.2 Determine and organise resources to undertake level of training required
4. Assess and organise labour resources	4.1 Produce estimate of total labour resources required, using standard installation times and allowing for contingencies 4.2 Determine required labour skills to meet resource allocation for planned activities 4.3 Establish workforce with required numbers and skills of staff to meet demand 4.4 Notify workforce of job requirements including work health and safety (WHS) considerations, and organise priorities to ensure agreed timeframe with client is met

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.3, 1.4	• Recognises and interprets written and visual text to determine key information and specific requirements and responsibilities
Writing	1.1-1.3, 1.5, 2.1, 2.2, 3.1, 4.4	• Develops material for a specific audience, using clear and detailed language to convey explicit information, requirements and recommendations
Oral Communication	1.3, 1.5, 2.3, 3.1, 4.1	• Participates in a verbal exchange of ideas and elicits the view and opinions of others by listening and questioning

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Numeracy	1.1, 1.4, 1.5, 2.1, 3.1, 4.1-4.3	• Uses mathematical skills to estimate materials and resource requirements
Navigate the world of work	1.4, 1.5	• Recognises and follows company policies and guidelines when evaluating and selecting tenders and negotiating price and conditions
Get the work done	All	• Applies formal processes when planning material and labour supply and client training tasks, producing plans with logically sequenced steps, reflecting some awareness of time and resource constraints and the needs of others in the immediate vicinity • Initiates standard procedures when responding to familiar problems within labour supply context

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTWOR301 Organise resources	ICTWOR3028A Organise resources	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWOR301 Organise resources

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- accurately develop tenders for customer premises equipment (CPE) products, equipment, peripherals and associated equipment
- assess tenders and provide a clear report outlining all options, including recommendations with supporting reasons
- organise supply of equipment and material to designated location to meet specified timeframe
- identify labour needs and organise labour to meet installation schedules
- determine client training needs.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline appropriate engineering and design practices and procedures
- identify appropriate tools, equipment and materials required to do the work
- identify enterprise permit procedures and recording procedures
- identify the work health and safety (WHS) practices
- outline work planning and organisation theory
- identify relevant plant and equipment operations
- identify relevant statutory requirements
- explain time management techniques.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – workplace effectiveness field of work and include access to:

- a site for organising resources
- enterprise and site-related documentation
- regulatory, supplier and equipment documentation than impacts on activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWOR302 Organise material supply

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the, skills and knowledge required to organise material supplies for a telecommunications project, including preparing and evaluating tenders from third party suppliers.

It applies to individuals who may be involved in assessing installation requirements, planning and performing installations, testing installed equipment and fault finding. It involves a degree of autonomy and may include limited supervision of others.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – workplace effectiveness

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine material needs	1.1 Assess material needs from design plans and comply with relevant legislation, codes, regulations and standards 1.2 Check availability of required materials within existing stock 1.3 Assess availability of material from preferred suppliers

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2. Prepare and evaluate tenders	2.1 Develop specifications and criteria for material supply and purchasing 2.2 Prepare tender documents and invite quotes from material suppliers according to enterprise policy 2.3 Evaluate tenders and ensure they are detailed in accordance with enterprise procedures
3. Organise delivery of equipment and material to site	3.1 Select types and quantities of equipment available from existing stocks and pack for distribution 3.2 Arrange delivery of equipment and material within specified timeframe 3.3 Organise third party supply according to agreed timeframe and supply agreements
4. Undertake administrative tasks	4.1 Record warranty details and distribute to relevant parties as required 4.2 Issue relevant financial documents according to enterprise policy 4.3 Record materials received in asset register according to enterprise procedures 4.4 Complete administrative requirements according to enterprise procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1-1.3, 2.3	• Recognises and interprets written and visual text to determine key information and specific requirements and responsibilities
Writing	2.1, 2.2, 3.2, 3.3, 4.1, 4.4	• Develops material for a specific audience using clear and detailed language to convey explicit information, requirements and recommendations • Employs the expected writing and formatting conventions to meet the expectations of a specific audience
Oral Communication	2.2, 3.2, 3.3, 4.1	• Participates in a verbal exchange of ideas and elicits the view and opinions of others by listening and questioning

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Numeracy	1.1, 2.2, 2.3, 3.1, 4.2, 4.3	• Uses mathematical skills to estimate materials and resource requirements
Navigate the world of work	1.1, 4.2-4.4	• Takes personal responsibility for adherence to relevant legislation, codes, regulations and standards, and enterprise policies and procedures
Get the work done	1.1-1.3, 2.1-2.3, 3.1-3.3	• Plans purchasing and supply of materials and equipment, accepting stated goals and aiming to achieve them efficiently • Implements actions in relation to supply and delivery as per plan, making slight adjustments if necessary, and addressing some unexpected issues • Uses a formal decision making process, setting or clarifying goals, gathering information, and identifying and evaluating several choices against a limited set of criteria in relation to assessing needs, selecting materials and equipment, and evaluating tenders

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTWOR302 Organise material supply	ICTWOR3035A Organise material supply	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWOR302 Organise material supply

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- accurately apply the tender process according to both enterprise and legislative requirements
- comply with all related work health and safety (WHS) requirements and work practices
- determine material needs:
  - from design plans
  - from relevant databases
  - beyond current holdings
- organise supply of equipment and material to site
- record materials received on asset register.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify appropriate engineering and design practices and procedures
- outline enterprise permit and recording procedures
- describe WHS practices
- outline work planning and organisational theory
- describe relevant plant and equipment operations
- identify relevant statutory requirements
- identify time management techniques
- identify tools, equipment and materials required to do the work.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – workplace effectiveness field of work and include access to:

- a site for ordering materials
- relevant regulatory, enterprise, supplier and equipment documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWOR303 Schedule resources

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to undertake scheduling of resources for a new installation or upgrade of an existing system for all telecommunications applications including telephony, data, video and multimedia.

It applies to individuals who may be involved in assessing installation requirements, planning and performing installations, testing installed equipment and fault finding. It involves a degree of autonomy and may include limited supervision of others.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – workplace effectiveness

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Scope project resources	1.1 Collate and analyse design and estimation documents from appropriate personnel for resource needs and deadlines, complying with relevant legislation, codes, regulations and standards 1.2 Consult interested parties for input to schedule
2. Schedule	2.1 Coordinate resource requirements for project to match available

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resources for project	labour to quantity and type of work required 2.2 Schedule availability of resources to suit relevant interested parties and according to works schedules, including start and finish dates 2.3 Document and clearly communicate resources schedule to appropriate personnel for approval
3. Monitor and coordinate resources schedule according to project progress	3.1 Monitor and coordinate quantity, quality and timing of supply of each input and service according to progress of projects being undertaken 3.2 Reschedule resources based on priorities and report to appropriate person according to enterprise guidelines 3.3 Complete administrative tasks

Foundation Skills

This section describes the Foundation Skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1, 3.3	• Recognises and interprets written and visual text to determine key information and specific requirements and responsibilities
Writing	1.1, 1.2, 2.2, 2.3, 3.2, 3.3	• Develops material for a specific audience using clear and detailed language to convey explicit information, requirements and recommendations
Oral Communication	1.2, 2.3, 3.2	• Participates in a verbal exchange of ideas and elicits the view and opinions of others by listening and questioning
Numeracy	1.1, 2.1-2.3, 3.1, 3.2	• Uses mathematical skills to estimate resource allocation and work schedules
Navigate the world of work	1.1, 2.3, 3.2	• Takes personal responsibility for adherence to legal and regulatory responsibilities relevant to scoping of project resources • Recognises and follows explicit and implicit enterprise protocols regarding gaining approval for resources schedule and any rescheduling
Interact with others	1.2	• Understands what to communicate, with whom and how in consultations regarding input to schedule

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Get the work done	All	• Sequences and schedules complex activities, monitors implementation and manages relevant communication when scoping, scheduling, monitoring and coordinating resources schedule • Uses systematic, analytical processes in matching labour supply to work required and monitoring progress, gathering relevant information and evaluating options against agreed criteria • Recognises and takes responsibility for addressing predictable and less predictable problems when rescheduling according to priorities

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTWOR303 Schedule resources	ICTWOR3041A Schedule resources	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWOR303 Schedule resources

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- identify resource requirements from plans, equipment and system manuals, specifications and relevant enterprise policy
- plan and provision to meet key dates and milestones for:
  - appropriately skilled labour
  - volume and type of material
- monitor work progress, and coordinate and adjust resource requirements to meet client needs and cost parameters.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify appropriate engineering and design practices and procedures
- identify enterprise permit procedures and enterprise recording procedures
- identify relevant industrial awards and work health and safety (WHS) practices
- outline relevant plant and equipment operations
- identify relevant statutory requirements
- describe team communication processes and deadline setting
- explain time management techniques
- identify tools, equipment and materials required to do the work
- outline work planning and organisational theory.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – workplace effectiveness field of work and include access to:

- a suitable telecommunications operations site
- current equipment
- relevant enterprise and site related documentation
- relevant regulatory, supplier and equipment documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWOR304 Manage spare parts

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to manage spare parts in all areas of telecommunications and includes maintenance of a database, stock control and dispatch.

It applies to individuals who may be involved in assessing installation requirements, planning and performing installations, testing installed equipment and fault finding. It involves a degree of autonomy and may include limited supervision of others.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Unit Sector

Telecommunications – workplace effectiveness

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Manage receipt and dispatch of spare parts	1.1 Obtain relevant legislation, codes, regulations and standards, and follow work health and safety (WHS) and environmental requirements for given work 1.2 Identify hazards and make worksite safe according to relevant safety legislation and company work practices, and use personal

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	protective equipment 1.3 Unload, unpack and store incoming spare parts using appropriate methods and enterprise procedures, and check off delivered items on documentation 1.4 Package, label and relocate outgoing spare parts ready for dispatch using enterprise procedures 1.5 Update parts database to reflect current spare parts movements and holdings, following each dispatch or delivery, and complete any other administrative task required by enterprise
2. Store spare parts	2.1 Label spare parts using appropriate identification scheme and place in predefined storage locations 2.2 Observe antistatic precautions when handling equipment susceptible to damage by electrostatic discharge 2.3 Display, maintain and update material safety data sheets (MSDS) on site
3. Manage stock flow	3.1 Action spare parts requests by checking database for availability and location, and organise the dispatch 3.2 Monitor levels of spare parts stock by examining database reports against enterprise usage and replenishing stock when necessary 3.3 Investigate and keep records of alternative suppliers of spare parts to minimise impact of availability and cost issues with regular suppliers 3.4 Monitor spare parts with limited shelf life, and dispose of and replace when necessary 3.5 Audit spare parts holdings for ready supply of items to minimise disruptions to job completions 3.6 Update database from appropriate documentation each time a store’s transaction occurs to maintain validity of data

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1, 1.5, 2.2, 3.1, 3.3, 3.4	• Recognises and interprets written and visual text to determine key information, and specific requirements and responsibilities

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Writing	1.3-1.5, 2.1, 2.3, 3.1, 3.3	• Develops material for a specific audience, using clear and detailed language to convey explicit information, requirements and recommendations • Uses expected writing conventions and forms
Oral Communication	3.1	• Participates in a verbal exchange of ideas and elicits the view and opinions of others by listening and questioning
Numeracy	1.3-1.5, 3.2-3.5	• Uses mathematical skills to estimate materials and evaluate and predict resource requirements
Navigate the world of work	1.1-1.4, 2.1-2.3	• Takes personal responsibility for adherence to legal and regulatory requirements relevant to spare parts work context, and draws attention to any issues that may affect self or others • Recognises and follows explicit and implicit company and health and safety protocols, and meets expectations associated with own role
Get the work done	All	• Takes responsibility for planning and organising own workload, identifying ways of sequencing and combining elements for greater efficiency, when managing receipt and dispatch, storage and stock flow • Uses systematic, analytical processes when monitoring and auditing, setting goals, gathering relevant information, and identifying and evaluating options against agreed criteria • Initiates standard problem solving procedures when identifying hazards within immediate context • Seeks to improve a future response through investigating alternative suppliers • Uses database systems and tools to access, organise, analyse and display information relevant to role

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTWOR304	ICTWOR3093A Manage spare	Updated to meet	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
Manage spare parts	parts	Standards for Training Packages	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWOR304 Manage spare parts

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- safely apply spare parts management procedures
- efficiently arrange for storage and ordering of spare parts
- research alternative parts replacements
- accurately update spare parts management database.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain computer and database operation
- describe handling of:
  - chemicals and dangerous materials
  - sensitive electronic equipment using antistatic procedures and safeguards
- outline modern storage practices and identification of parts location
- outline work health and safety (WHS) procedures
- identify service level agreements
- describe stocktake and audit of spare parts holdings
- identify telecommunications components and assemblies.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – workplace effectiveness field of work and include access to:

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- a site where work may be conducted
- current equipment
- a database for relevant regulations
- organisational procedures
- equipment documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWOR305 Supervise worksite activities

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to supervise small-scale projects with a limited range of technical skills.

It applies to individuals who may be involved in assessing installation requirements, planning and performing installations, testing installed equipment and fault finding. It involves a degree of autonomy and may include limited supervision of others.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – workplace effectiveness

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for worksite activities	1.1 Clarify requirements of job with client and project personnel, and arrange access to site 1.2 Confirm resource requirements and allocate time and schedule activities with project manager following relevant legislation, codes, regulations and standards, site specific safety requirements and enterprise procedures

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	1.3 Document or articulate worksite activities plan and verify with project manager 1.4 Source materials and equipment and place orders according to enterprise policy 1.5 Confirm external agency licences and approvals 1.6 Notify affected parties of works to be undertaken 1.7 Inform staff of their responsibilities on site
2. Supervise and monitor worksite activities	2.1 Direct and supervise staff in work activities, following plan 2.2 Account for staff, activities and resource usage 2.3 Recognise contingency situations and take corrective actions in consultation with project manager
3. Perform administrative tasks	3.1 Undertake administrative tasks 3.2 Prepare simple report and present to project manager

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.2, 1.4, 1.5, 3.1	• Recognises and interprets text to determine key information and specific requirements and responsibilities
Writing	1.1-1.3, 1.5-1.7, 2.1, 2.3, 3.1, 3.2	• Develops material for a specific audience using clear and detailed language
Oral Communication	1.1-1.3, 1.5-1.7, 2.1, 2.3, 3.2	• Participates in a verbal exchange of ideas and elicits the views and opinions of others by listening and questioning
Numeracy	1.2, 2.2	• Uses mathematical skills to estimate materials and evaluate and predict resource requirements
Navigate the world of work	1.2-1.5	• Appreciates the implications of legal and regulatory responsibilities related to own work, and recognises some general legal principles applicable across work contexts • Recognises and follows explicit and implicit

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		enterprise policies and protocols, and meets expectations associated with own role
Interact with others	1.1-1.7, 2.1-2.3	• Understands what to communicate, with whom and how when preparing, monitoring and supervising worksite activities • Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective group interaction, influencing direction and taking a leadership role when supervising and monitoring activities • Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context to identify relevant information and risks, and identify and evaluate alternative strategies and resources when preparing, supervising and monitoring worksite activities • Recognises and takes responsibility for addressing predictable and less predictable problems in familiar work contexts

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTWOR305 Supervise worksite activities	ICTWOR3127A Supervise worksite activities	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWOR305 Supervise worksite activities

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- accurately plan work activities, prioritising and allocating tasks
- liaise effectively with client or project manager
- monitor work progress and reallocate resources to meet completion requirements
- supervise staff, ensuring compliance with work health and safety (WHS) and relevant regulations.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify appropriate tools, equipment and materials required for the work
- identify enterprise permit procedures and recording procedures
- describe WHS practices
- identify relevant plant and equipment operations
- identify relevant statutory requirements and industrial awards
- explain team communication processes
- describe typical worksite issues
- describe work planning and organisation theory.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – workplace effectiveness field of work and include access to:

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- a telecommunications operations site
- equipment currently used in industry
- enterprise and site related documentation
- agency licences and relevant regulatory, supplier and equipment documentation that impacts on worksite activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWOR306 Resolve technical enquiries using multiple information systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to remotely support the resolution of complex technical enquiries related to a product or service.

It applies to individuals in a call centre environment with a background in telecommunications and experience in client access networks and client infrastructure, including equipment and cabling, who use multiple information systems to both obtain and record client information.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – workplace effectiveness

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Initiate contact with client	1.1 Apply all relevant legislation, codes, regulations and standards in resolution process 1.2 Receive and analyse enquiry to efficiently select initial course of action

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	1.3 Engage effectively with client to confirm initial referral details and propose initial course of action
2. Obtain information from multiple information systems	2.1 Identify information needs and sources of this information 2.2 Log on to and navigate relevant information systems efficiently 2.3 Record details of informant and enquiry in information systems according to enterprise requirements 2.4 Identify and verify information relevant to enquiry and its resolution with informant
3. Develop plan to resolve enquiry	3.1 Review critical information with informant and apply technical expertise to develop options for resolving enquiry 3.2 Consider all inputs and recommend course of action, including escalation 3.3 Negotiate suitable course of action with informant 3.4 Record details of course of action as required by enterprise information systems
4. Implement plan to resolve enquiry	4.1 Confirm negotiated course of action with informant prior to initiating actions and seek agreement on schedule of actions for longer term resolutions 4.2 Identify and initiate actions to be taken by technical support operator, informant or other parties 4.3 Contact informant to confirm success of planned actions 4.4 Record outcomes of resolution as required by information systems

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1, 1.2, 2.1, 2.2, 2.4, 3.1, 3.2, 4.2	• Recognises and interprets text to determine key information and specific requirements and responsibilities
Writing	1.3, 2.3, 2.4, 3.1, 3.3, 3.4, 4.1-4.4	• Prepares specific information that conveys an understanding of outcomes and alternatives, and uses terminology appropriate to present to relevant personnel

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Oral Communication	1.3, 2.4, 3.1, 3.3, 4.1-4.3	• Participates in a verbal exchange of ideas and elicits the views and opinions of others by listening and questioning • Articulates requirements and strategies clearly, distinctively and creatively, based on techniques and language appropriate to the audience and environment
Navigate the world of work	1.1	• Takes personal responsibility for adherence to legal and regulatory requirements relevant to own work context
Interact with others	1.3, 2.4, 4.1, 4.3	• Initiates and contributes to conversations with clients, responding, explaining, clarifying and expanding on ideas and information as required
Get the work done	1.2, 1.3, 2.2, 2.3, 3.1-3.3, 4.4	• Plans and implements client enquiry resolution, accepting stated goals and aiming to achieve them efficiently • Selects from a range of pre-determined options when determining action to be taken by others, identifying and taking situational factors into account • Applies formal problem solving processes when tackling an unfamiliar problem, breaking complex issues into manageable parts and identifying and evaluating several options for action • Uses multiple digital information systems and tools to access, organise, analyse and display information relevant to role

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTWOR306 Resolve technical enquiries using multiple information systems	ICTWOR3231A Resolve technical enquiries using multiple information systems	Updated to meet Standards for Training Packages	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWOR306 Resolve technical enquiries using multiple information systems

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- apply efficient computer usage to efficiently navigate relevant systems for the required information
- use effective interpersonal skills to develop a plan of action to deal with the enquiry
- develop agreement to resolve the enquiry
- accurately document all dealings for future reference and follow up resolution effectively.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain a range of conflict resolution approaches
- identify database and spreadsheet concepts
- describe enterprise escalation policies and procedures
- identify enterprise information systems
- identify legislation, codes of practice and other formal agreements that directly impact on resolution processes
- outline typical issues and challenges that occur when dealing with clients in a telecommunications environment.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – workplace effectiveness field of work and include access to:

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- a client contact centre
- current client contact technologies
- relevant regulatory and equipment documentation that impacts on work activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWOR307 Collect and analyse technical information

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to investigate a technical situation involving the collection and analysis of information from a variety of sources, including interviews and database systems. The technical situation under investigation may be the result of a fault or failure of a product, service or process.

It applies to individuals who undertake investigations. It may involve a degree of autonomy and some accountability for the quality of outcomes.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunication – workplace effectiveness

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Obtain recorded information	1.1 Apply all relevant legislation, codes, regulations and standards in analysis process 1.2 Verify situation to be investigated and identify appropriate sources of information for this situation 1.3 Obtain relevant information from computer systems and analyse

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	and record information
2. Conduct simple interview	2.1 Select interviewees with correct information about matter being investigated and select interview process to suit circumstances of interviewee 2.2 Prepare for interview by performing preliminary research 2.3 Develop interview questions to identify key points for effective interview 2.4 Inform interviewee how the information will be used and observe their right to privacy 2.5 Conduct interview using effective listening and questioning techniques, and focus interviewee on information relevant to matter being investigated 2.6 Record information obtained in interview
3. Analyse information	3.1 Analyse critical information by reviewing situation being investigated 3.2 Distinguish between factual information and assumptions, and make deductions based on factual critical information 3.3 Incorporate assumptions into reasoning process where it assists in forming valid inferences 3.4 Analyse inferences from those deductions and assumptions, and produce resolution of situation being investigated
4. Implement outcomes of analysis	4.1 Identify practical actions based on inferences arising from analysis process 4.2 Implement practical actions to resolve situation 4.3 Review outcomes of practical action by assessing their impact on situation

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1, 1.2, 3.1, 3.2, 4.1	• Recognises and evaluates text to determine key information and specific requirements and responsibilities
Writing	1.2, 1.3, 2.1, 2.3, 2.5,	• Develops material for a specific audience using clear and detailed language

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	2.6, 3.1, 3.3, 3.4, 4.3	• Records information in a sequential manner using clear and appropriate terminology for reference purposes
Oral Communication	1.2, 2.1, 2.4, 2.5	• Participates in a verbal exchange of ideas and elicits the view and opinions of others by listening and questioning, modifying the approach according to individual responses • Presents expectations of workplace procedures, choosing language appropriate to the audience
Numeracy	3.1, 3.2	• Performs mathematical calculations to check, interpret and confirm results of analysis
Navigate the world of work	1.1	• Takes personal responsibility for adherence to legal and regulatory requirements relevant to the analysis process
Get the work done	All	• Takes responsibility for planning and organising the resolution process, identifying ways of sequencing and combining elements for greater efficiency, and considering how to link with the work of others • Applies formal processes when planning analysis, producing plans with logically sequenced steps and reflecting some awareness of time and resource constraints and the needs of others • Implements practical actions as per plan, making slight adjustments if necessary, and addressing some unexpected issues • Uses a formal decision making process in analysing information, setting or clarifying goals, gathering information, and identifying and evaluating against a limited set of criteria • Applies formal problem solving processes when tackling an unfamiliar problem, breaking complex issues into manageable parts and identifying and evaluating several options for action

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Unit Mapping Information

Code and title **current version**	**Code and title** **previous version**	**Comments**	**Equivalence status**
ICTWOR307 Collect and analyse technical information (release 2)	ICTWOR307 Collect and analyse technical information (release 1)	Correction to numbering in performance criteria	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWOR307 Collect and analyse technical information

Modification History

Release	Comments
Release 2	This version first released with ICT Information and Communications Technology Training Package Version 3.1. Release created to correct numbering in performance criteria.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- apply keyboard skills and computer literacy to accurately use a database
- demonstrate appropriate listening, questioning and interviewing techniques
- develop an accurate record of interview
- integrate information from varied sources
- draw logical inferences from information gathered and make sound recommendations for action based on inferences.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe analytical techniques appropriate for information analysis, especially deductive reasoning
- explain conflict resolution approaches
- explain database and spreadsheet concepts and enterprise information systems
- explain information types and their sources
- identify sources of legislation, codes of practice and other formal agreements that directly impact on resolution processes
- describe listening, questioning and interviewing techniques

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- identify privacy issues
- outline the influence of human factors on information analysis, including prejudice, biases and fallacies in reasoning
- describe typical issues and challenges that occur when dealing with clients.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – workplace effectiveness field of work and include access to:

- a client contact centre
- current client contact technologies
- interview and evidence recording equipment
- relevant regulatory and equipment documentation that impacts on work activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWOR401 Undertake a civil site survey

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to assess a site for a telecommunications project, including gathering information about the site and the project, surveying the site and evaluating the suitability of the site for the work.

It applies to individuals who work as technical staff with a range of telecommunications skills, involves a degree of autonomy and may include limited supervision of others.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – workplace effectiveness

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for survey	1.1 Discuss detailed requirements and arrange access to site with key stakeholders 1.2 Examine regulatory and statutory requirements associated with telecommunications project 1.3 Determine need for specialist studies for site
2. Survey land,	2.1 Survey existing buildings to assess capability of meeting changes

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buildings and facilities	required for project 2.2 Collect information through site survey 2.3 Determine environmental impact of development 2.4 Estimate impact of prevailing weather conditions on planned changes 2.5 Assess and document building options should new structure be necessary 2.6 Assess geographical nature of land and determine barriers to signalling
3. Report findings and recommendations	3.1 Outline survey findings and recommendations to accommodate project requirements on site 3.2 Develop options to meet planned changes and associated cost-benefit data 3.3 Complete report and forward to relevant stakeholders following relevant procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance

Skill	**Performance Criteria**	**Description**
Reading	1.2, 1.3, 2.3-2.5	• Evaluates complex texts to determine key information, and specific requirements and responsibilities
Writing	1.1, 2.1, 2.2, 2.4-2.6, 3.1-3.3	• Develops written and complex diagrammatic material for a specific audience using appropriate forms and conventions • Records information in a sequential manner using clear and appropriate terminology for reference purposes
Oral Communication	1.1, 3.1, 3.3	• Conveys details that incorporate evaluation of information and specialised and cohesive language in a format and style appropriate to a specific audience
Numeracy	2.1, 2.2, 2.5, 2.6, 3.2	• Uses complex mathematical equations to calculate accurately required measurements and diagrams

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Navigate the world of work	1.2, 3.3	• Keeps up to date on changes to legislation or regulations relevant to own rights and responsibilities, and considers implications of these when negotiating, planning and undertaking telecommunications project work • Recognises and follows explicit and implicit protocols and meets expectations associated with own role in relation to communication with stakeholders
Get the work done	1.1-1.3, 2.1-2.6	• Sequences and schedules survey activities, monitors implementation and manages relevant communication with stakeholders • Uses systematic, analytical processes in planning and implementing a survey, setting goals, gathering relevant information, and identifying and evaluating options against agreed criteria • Uses analytical processes to decide on a course of action, establishing criteria for deciding between options in relation to new structures and planned changes

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTWOR401 Undertake a civil site survey	ICTWOR4032A Undertake a civil site survey	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWOR401 Undertake a civil site survey

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- negotiate with key stakeholders, enterprise personnel, clients, community representatives, specialists and other contractors on environmental and network needs
- accurately undertake a survey of environmental conditions, land, buildings and facilities for a telecommunications project
- apply legislative requirements to the project, including relevant operational codes, work health and safety (WHS) requirements and work practices
- report survey findings, outlining options and including recommendations with supporting reasons and coverage of existing and proposed needs.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline the background information required to undertake a civil site survey
- explain basic meteorology and weather conditions
- describe the features and operating requirements of construction equipment
- describe geographical barriers to signalling
- identify legislation, codes of practice and other formal agreements that impact on the work activity
- describe licensing and regulatory issues applying to a civil site survey on telecommunications sites
- outline soil testing methods and requirements
- describe
  - civil site safety practices
  - personal protective equipment for civil survey projects

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  - WHS requirements relating to surveys and site conditions
- outline typical issues and challenges that occur on site.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – workplace effectiveness field of work and include access to:

- a site for survey
- current equipment
- relevant regulatory and enterprise documentation.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTWOR402 Schedule equipment maintenance

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to schedule maintenance of telecommunications equipment and networks on client premises and service provider networks.

It applies to individuals with a range of telecommunications skills, involves a degree of autonomy and may include limited supervision of others.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications – workplace effectiveness

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify preventative maintenance program for clients	1.1 Verify details of client system and equipment type to assess level of maintenance required 1.2 Determine type and extent of maintenance agreed and check against existing service level agreement with client 1.3 Contact client and agree on suitable time to carry out maintenance program
2. Plan maintenance and	2.1 Verify details of warranties and service agreements for

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fault clearance activity	client equipment and advise client of charging details where warranty or agreement does not exist 2.2 Negotiate and agree on commitments and responsibility with client 2.3 Organise work priorities so that maintenance staff are available to meet scheduled commitments
3. Arrange allocation of labour resources	3.1 Evaluate expertise and competencies of staff in relation to skills required to maintain equipment noted in service level agreement 3.2 Allocate staff member with appropriate skills and competency to task to minimise risk of failure 3.3 Advise designated repair officer of responsibilities, warranties and service agreements in conducting maintenance and fault repair 3.4 Prepare schedule of maintenance program and confirm with client
4. Organise assistance to fault staff	4.1 Provide additional resources if required 4.2 Arrange delivery of additional materials and parts 4.3 Escalate fault to appropriate level when it cannot be rectified in specified timeframe 4.4 Organise product manufacturer support as appropriate

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	**Performance Criteria**	**Description**
Reading	1.1, 1.2, 2.1, 3.1	• Recognises and evaluates text to determine key information and specific requirements and responsibilities
Writing	1.1-1.3, 2.1-2.3, 3.1-3.4, 4.2-4.4	• Develops material for a specific audience using clear and detailed language • Records information in a sequential manner using clear and appropriate terminology for reference purposes
Oral	1.1-1.3, 2.1-2.3,	• Articulates requirements and strategies clearly, distinctively and creatively, based on

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Communication	3.1-3.4, 4.2-4.4	techniques and language appropriate to the audience and environment • Participates in a verbal exchange of ideas, and elicits the views and opinions of others by listening and questioning
Get the work done	All	• Sequences and schedules maintenance activities, monitors implementation and manages relevant communication • Determines the best course of action when organising work priorities and allocating staff to tasks, with consideration of possible implications of different courses of action • Uses analytical processes to decide on a course of action in relation to organising additional resources and logistics

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICTWOR402 Schedule equipment maintenance	ICTWOR4079A Schedule equipment maintenance	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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Assessment Requirements for ICTWOR402 Schedule equipment maintenance

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- plan and organise a preventive maintenance schedule according to vendor specified requirements and client agreements
- negotiate fault clearance arrangements with clients, applying related work health and safety (WHS) requirements and work practices
- plan and schedule fault clearance activity, allocating an appropriately skilled repair officer to rectify faults.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe electronic databases, spreadsheets and schedulers
- describe equipment to be maintained
- outline legislation, codes of practice and other formal agreements that impact on the work activity
- describe the process for the procurement of spare parts
- explain service level agreements
- outline specific WHS requirements relating to the activity and site conditions
- describe typical issues and challenges that occur on site
- outline vendor procedures.

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Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the telecommunications – workplace effectiveness field of work and include access to:

- a site where equipment maintenance may be conducted
- enterprise and site-related documentation
- regulatory, enterprise, supplier and equipment documentation that impacts on work activities.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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BSBCMM101 Apply basic communication skills

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to develop basic communication skills in the workplace in particular gathering, conveying and receiving information together with completing assigned written information.

It applies to individuals working under direct supervision who are developing basic skills and knowledge of workplace communication in preparation for working in a broad range of settings

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Communication – Interpersonal Communication

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Identify workplace communication procedures	1.1 Identify organisational communication requirements and workplace procedures with assistance from appropriate people 1.2 Identify appropriate lines of communication with supervisors and colleagues 1.3 Seek advice on the communication method/equipment most appropriate for the task

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ELEMENT	PERFORMANCE CRITERIA
2 Communicate in the workplace	2.1 Use effective questioning, and active listening and speaking skills to gather and convey information 2.2 Use appropriate non-verbal behaviour at all times 2.3 Encourage, acknowledge and act upon constructive feedback
3 Draft written information	3.1 Identify relevant procedures and formats for written information 3.2 Draft and present assigned written information for approval, ensuring it is written clearly, concisely and within designated timeframes 3.3 Ensure written information meets required standards of style, format and detail 3.4 Seek assistance and/or feedback to aid communication skills development

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 3.1	• Reviews textual information to identify communication requirements and organisational procedures
Writing	3.2, 3.3	• Drafts simple texts using appropriate grammar, spelling and punctuation in accordance with organisational standards • Proofreads own texts for accuracy and compliance with organisational requirements
Oral Communication	1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 3.2, 3.4	• Asks questions and listens to gain information or confirm understanding • Listens and follows instructions
Navigate the world of work	1.1, 1.2, 3.1, 3.3, 3.4	• Follows organisational policies and procedures and practices relevant to own role • Develops skills required to carry out own role by seeking and acting on feedback

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Interact with others	1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 3.4	• Follows instructions regarding what and how to communicate • Seeks to cooperate with others to achieve results in immediate work context
Get the work done	1.3, 2.3, 3.1, 3.2, 3.3	• Follows clearly defined instructions, seeking assistance when necessary • Uses digital technologies following instructions to enter and retrieve data

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBCMM101 Apply basic communication skills	BSBCMM101A Apply basic communication skills	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBCMM101 Apply basic communication skills

Modification History

Release	Comments
Release 1	This version first released with Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- gather information about procedures, methods and equipment requirements for workplace communication, with the assistance of others
- use appropriate verbal and non-verbal skills to seek and convey information in face-to-face situations
- draft routine written documents within designated timeframes and check that the documents meet organisational requirements.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline organisational policies, plans and procedures related to the organisation's standards or protocols for workplace communication
- describe different communication styles.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced by individuals using interpersonal communication skills in the workplace and include access to:

- office equipment
- business resources
- workplace policies and procedures relating to communication
- case studies and, where possible, real situations
- interaction with others.

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Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBCRT501 Originate and develop concepts

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to originate and develop concepts for products, programs, processes or services to an operational level.

It applies to individuals who develop concepts for any business or community activity or process, such as marketing and advertising campaigns, staff development programs, information technology and communication systems, radio and television programs, entertainment events, films, exhibitions and digital media products. Individuals operate with a high degree of autonomy, but collaborate with others to generate ideas and refine concepts to the point where they can be implemented.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Creativity and Innovation – Creative Thinking

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Evaluate and explore needs and opportunities	1.1 Research and evaluate existing information that informs new concept development 1.2 Where appropriate, identify and use gaps in current range of products, programs, processes or services as the catalyst for generating new ideas or concepts

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ELEMENT	PERFORMANCE CRITERIA
	1.3 Expand the potential of new ideas through exploration of opportunities beyond the obvious 1.4 Identify factors that could have an impact on ideas or concepts to be developed, including potential for commercialisation 1.5 Determine whether other players are filling identified gaps or investigating similar opportunities 1.6 Develop preliminary ideas on innovative and different ways to address needs and opportunities 1.7 In consultation with relevant stakeholders, agree on broad parameters for developing ideas and concepts to meet market requirements
2 Develop a range of creative approaches	2.1 Use a range of creative thinking techniques to generate innovative and creative concepts to address identified needs 2.2 Challenge, test and experiment with different concepts and ideas as part of a collaborative process 2.3 Evaluate concepts in terms of their suitability for the target audience or purpose, their feasibility and their commercial potential 2.4 Take account of social, ethical and environmental issues as concepts and ideas are generated and discussed 2.5 Identify resources required to achieve desired creative and innovative outcomes 2.6 Evaluate the effectiveness of different strategies for achieving desired outcomes 2.7 Select concepts or approaches that achieve required outcomes in an innovative and feasible way 2.8 Present proposed concepts or approaches in an appropriate format
3 Refine concepts	3.1 Ensure concept development process is open to ongoing refinement and testing 3.2 Seek input and feedback on concepts from relevant stakeholders 3.3 Seek specialist advice on creative and technical aspects of proposals as required 3.4 Compare concepts with best practice examples of similar products, programs, processes or services 3.5 Use a range of creative and practical criteria to determine the

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ELEMENT	PERFORMANCE CRITERIA
	advantages and disadvantages of different concepts 3.6 Evaluate constraints on the realisation of concepts or ideas 3.7 Refine proposals based on analysis and feedback
4 Develop concepts to an operational level	4.1 Use refined concepts as the basis for developing detailed implementation specifications 4.2 Present specifications to relevant parties for approval, funding or endorsement 4.3 Reflect on methodology used to generate concepts and ideas and note ways of improving this in the future

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Learning	3.1, 3.7, 4.3	• Reflects and evaluates methods used to develop concepts and seeks ways to improve • Actively elicits the views and opinions of others to develop and refine ideas
Reading	1.1-1.5, 2.3, 2.6, 3.4, 3.5, 3.6, 3.7, 4.1	• Interprets and evaluates a range of complex information and considers how to develop and adopt ideas to deliver products or services at an operational level
Writing	1.1-1.4, 1.6, 2.4-2.6, 2.8, 3.2-3.7, 4.1, 4.2	• Documents findings and ideas using language and structure to suit the purpose • Develops documents designed to gain feedback from others • Prepares proposals and plans for relevant stakeholders incorporating appropriate vocabulary and grammatical structures
Oral Communication	1.7, 2.2, 2.4, 3.2, 3.3, 4.2	• Expresses thoughtful and challenging opinions using engaging language and non-verbal features • Elicits views and information from others using a range of active listening and questioning techniques
Interact with	1.7, 2.2, 2.4, 2.8,	• Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective group

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others	3.2, 3.3, 4.2	interaction and influencing direction • Selects and uses appropriate conventions and protocols when communicating with internal and external stakeholders to seek or share information
Get the work done	1.1- 1.5, 2.1-2.7 , 3.1, 3.4-3.6, 4.2, 4.3	• Plans and implements complex activities with multiple considerations, monitors implementation, and manages relevant feedback • Uses systematic, analytical processes in complex, non-routine situations to gather required information, identify and evaluate possible concepts, and select the most appropriate concept for development • Develops new and innovative ideas through exploration, analysis and critical thinking • Monitors outcomes, considering results from a range of perspectives and identifying key concepts and principles that may be adaptable to future situations

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBCRT501 Originate and develop concepts	BSBCRT501A Originate and develop concepts	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBCRT501 Originate and develop concepts

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- generate concepts and ideas that provide innovative solutions to identified issues
- evaluate and test concepts and ideas
- present ideas and information to others and reflect on responses
- develop at least two concepts, substantiated and supported with sufficient information to allow implementation to occur.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must :

- describe the broad context in which concepts are being developed
- outline cultural, social and environmental issues and impacts to be considered in developing new concepts
- identify issues and requirements to commercialise the concept
- outline practical and operational issues to be considered in a specific work or community context
- describe the range of broad practical and operational issues that determine whether a concept can be implemented
- identify techniques for generating creative ideas and solutions, and for translating these ideas into workable concepts.

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Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the creativity and innovation – critical thinking field of work and include access to:

- a full range of background information required to evaluate the operational factors that will affect the implementation of concepts
- opportunities to collaborate with others throughout the concept development process.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBCUS201 Deliver a service to customers

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to deliver all aspects of customer service at an introductory level. It includes creating a relationship with customers, identifying their needs, delivering services or products and processing customer feedback.

It applies to individuals who perform a range of routine tasks in the workplace using a limited range of practical skills and fundamental knowledge of customer service in a defined context under direct supervision or with limited individual responsibility.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Stakeholder Relations – Customer Service

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Establish contact with customers	1.1 Acknowledge and greet customer in a professional, courteous and concise manner according to organisational and legislative requirements 1.2 Maintain personal dress and presentation in line with organisational requirements 1.3 Communicate using appropriate interpersonal skills to facilitate accurate and relevant exchange of information

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Maintain sensitivity to customer specific needs and any cultural, family and individual differences 1.5 Establish rapport/relationship with customer and express a genuine interest in customer needs/requirements
2 Identify customer needs	2.1 Use appropriate questioning and active listening to determine customer needs 2.2 Assess customer needs for urgency to identify priorities for service delivery 2.3 Provide customer with information about available options for meeting customer needs and assist customer to identify preferred option/s 2.4 Identify personal limitations in addressing customer needs and seek assistance from designated persons where required
3 Deliver service to customers	3.1 Provide prompt customer service to meet identified needs according to organisational requirements 3.2 Provide information regarding problems and delays, and follow-up within appropriate timeframes as necessary 3.3 Communicate with customers in a clear, concise and courteous manner 3.4 Identify opportunities to enhance the quality of service and products, and take action to improve the service whenever possible
4 Process customer feedback	4.1 Promptly recognise customer feedback and handle sensitively according to organisational and legislative requirements 4.2 Accurately record any feedback and communication between customers and the organisation according to organisational standards, policies and procedures and legislative requirements 4.3 Identify any unmet customer needs and discuss suitability of other products/services 4.4 Support customers to make contact with other services according to organisational policies and procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

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Skill	Performance Criteria	Description
Reading	1.1, 1.2, 3.1, 4.1, 4.2, 4.4	• Understands requirements in organisational policy and procedure documents • Interprets product and service information in a range of formats to provide customer advice
Writing	4.2	• Records customer information according to organisational requirements
Oral Communication	1.1, 1.3, 1.4, 1.5, 2.1-2.4, 3.2, 3.3, 4.3	• Provides information or advice using structure and language to suit the audience • Asks questions and listens to gain information or confirm understanding
Navigate the world of work	1.1, 1.2, 3.1, 4.1, 4.2, 4.4	• Follows organisational procedures and practices relevant to own role
Interact with others	1.1, 1.3-1.5, 2.1-2.4, 3.1, 3.2, 3.3, 4.1, 4.3, 4.4	• Uses accepted communication practices to establish connections, build rapport and develop professional working relationships • Adjusts personal communication style in response to the opinions, values and particular needs of others
Get the work done	3.2, 3.4, 4.1- 4.3	• Addresses routine problems in familiar work contexts • Recognises opportunities to enhance work practices and outcomes

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
BSBCUS201 Deliver a service to customers	BSBCUS201B Deliver a service to customers	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBCUS201 Deliver a service to customers

Modification History

Release	Comments
Release 1	This version first released with Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- greet customer and establish rapport/relationship in accordance with organisational requirements
- identify customer needs using appropriate interpersonal skills
- provide prompt service to address customer needs in accordance with organisational requirements
- identify and follow up opportunities to increase the quality of service and products
- respond to and record all customer feedback according to organisational standards, policies and procedures.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify and briefly describe key provisions of relevant legislation from all forms of government that apply to provision of customer services
- identify and explain workplace organisational policies and procedures relating to customer service and the customer service process.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the customer service field of work and include access to:

- office equipment and technology
- workplace documents, organisational policies and procedures for customer service

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- examples of customer complaints and feedback
- case studies and, where possible, real situations
- interaction with others.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBCUS402 Address customer needs

Modification History

Release	Comments
Release 2	This version released with BSB Business Services Training Package Version 2.0 Version created to clarify assessment conditions
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to manage an ongoing relationship with a customer over a period of time. This includes helping customers articulate their needs and managing networks to ensure customer needs are addressed.

It applies to individuals who are expected to have detailed product knowledge in order to recommend customised solutions. In this role, individuals would be expected to apply organisational procedures and be aware of, and apply as appropriate, broader factors involving ethics, industry practice and relevant government policies and regulations.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Stakeholder Relations – Customer Service

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Assist customer to articulate needs	1.1 Ensure customer needs are fully explored, understood and agreed 1.2 Explain and match available services and products to customer

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ELEMENT	PERFORMANCE CRITERIA
	needs 1.3 Identify and communicate rights and responsibilities of customers to the customer as appropriate
2 Satisfy complex customer needs	2.1 Explain possibilities for meeting customer needs 2.2 Assist customers to evaluate service and/or product options to satisfy their needs 2.3 Determine and prioritise preferred actions 2.4 Identify potential areas of difficulty in customer service delivery and take appropriate actions in a positive manner
3 Manage networks to ensure customer needs are addressed	3.1 Establish effective regular communication with customers 3.2 Establish, maintain and expand relevant networks to ensure appropriate referral of customers to products and services from within and outside the organisation 3.3 Ensure procedures are in place to ensure that decisions about targeting of customer services are based on up-to-date information about the customer and the products and services available 3.4 Ensure procedures are put in place to ensure that referrals are based on the matching of the assessment of customer needs and availability of products and services 3.5 Maintain records of customer interaction in accordance with organisational procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.3, 2.2, 2.3, 2.4, 3.2, 3.3, 3.4, 3.5	• Interprets textual information obtained from a range of sources and determines how content may be applied to individuals and to organisational requirements
Writing	1.1, 3.1, 3.2, 3.3, 3.4, 3.5	• Prepares written reports, up-to-date procedures and other workplace documentation that communicate complex information clearly and effectively
Oral	1.1, 1.2, 1.3, 2.1,	• Clearly articulates customer's needs using language suitable to diverse audiences and employs listening

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Communication	2.2, 3.1, 3.2	and questioning techniques to confirm understanding
Navigate the world of work	3.5	• Recognises and applies organisational protocols and meets expectations associated with own work
Interact with others	1.1-1.3, 2.1, 2.2, 3.1, 3.2	• Selects and uses appropriate communication techniques to establish and maintain positive working relationships • Establishes connections and shares information with others who can contribute to effective work outcomes
Get the work done	2.3, 2.4, 3.3-3.5	• Develops and implements plans for routine and non-routine tasks recognising the importance of aligning goals and expectations to achieve outcomes • Recognises and takes responsibility for addressing predictable and non-predictable problems in own work context • Uses digital systems to organise and store information relevant to own work

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBCUS402 Address customer needs Release 2	BSBCUS402 Address customer needs Release 1	Updated to clarify assessment conditions	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBCUS402 Address customer needs

Modification History

Release	Comments
Release 2	This version released with BSB Business Services Training Package Version 2.0 Version created to clarify assessment conditions
Release 1	This version first released with Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- communicate effectively with customers including
  - helping customers to articulate their needs and evaluate options
  - explaining products/services and how they match customer needs
  - establishing regular communication
  - explaining customer rights and responsibilities
- address customer's needs
- use organisational procedures to document customer satisfaction
- develop and maintain networks to support meeting customer needs
- identify potential difficulties in meeting customer needs and taking appropriate action.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain organisational procedures and standards for establishing and maintaining customer service relationships

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- describe informed consent
- explain consumer rights and responsibilities
- describe ways to establish effective regular communication with customers
- outline details of products or services including with reference to:
  - possible alternative products and services
  - variations within a limited product and service range.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the customer service field of work and include access to:

- office equipment and resources
- business technology
- organisational policies, procedures, quality systems, manuals and guidelines for customer management
- examples of products/services and promotional strategies
- case studies and, where possible, real situations
- interaction with others.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBDES401 Generate design solutions

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to generate design solutions in response to a particular design need.

It applies to individuals who generate concepts and solutions in response to a design challenge in any industry context. The starting point may be an open or closed brief; a spontaneous idea; modification of an existing product, service, process or system; or a point in an ongoing design process.

This unit builds on BSBDES201 Follow a design process, and places greater focus on research, concept generation and collaboration with others as key aspects of the design process.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Design – Design Process

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Define the design challenge	1.1 Determine and evaluate user/client needs 1.2 Clarify specifications, parameters and constraints of the

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ELEMENT	PERFORMANCE CRITERIA
	design challenge in consultation with relevant stakeholders 1.3 Articulate essence of the design challenge in an appropriate format
2 Undertake research to inform the design solution	2.1 Source, evaluate and acknowledge information that may assist in responding to the design challenge 2.2 Consider historical, current and future perspectives and trends that might inform design solutions 2.3 Consider relevant social, economic, environmental, ethical and cultural issues that may impact design solutions 2.4 Analyse, distil and collate information to inform the development of the design solution
3 Communicate and collaborate with others	3.1 Establish and develop working relationships with key stakeholders 3.2 Seek and integrate input and ideas from others during design process 3.3 Inform key stakeholders about progress of the design and related implications 3.4 Negotiate and agree on any changed requirements or modifications
4 Generate ideas and responses to the design challenge	4.1 Reflect on and integrate ideas generated from research and consultation 4.2 Use a range of creative thinking techniques to generate different options and ideas 4.3 Apply relevant principles of functionality, ergonomics, aesthetics and sustainability to development of different options
5 Select a design solution	5.1 Develop and use a range of criteria to evaluate different options and ideas 5.2 Select a preferred solution based on agreed criteria and in consultation with relevant key stakeholders 5.3 Adjust and refine proposed design solution based on research, testing and reflection 5.4 Present proposed design solution with appropriate supporting documentation according to project requirements

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 2.1, 2.4	• Researches, collates and analyses textual information from a wide range of sources
Writing	1.2, 1.3, 2.1, 2.4, 5.1, 5.3, 5.4	• Documents ideas, sources and concepts using appropriate formats and specific language • Refines and edits work
Oral Communication	1.2, 1.3, 3.2-3.4, 5.2, 5.4	• Actively participates in verbal exchanges of ideas and elicits views and opinions of others by listening and questioning • Clarifies, explains or presents information relating to design solution using clear and specific language appropriate to audience
Numeracy	1.3, 4.3, 5.1, 5.4	• Interprets numeric data and applies mathematical calculations relevant to design solution
Navigate the world of work	2.3	• Understands nature and purpose of own role and associated responsibilities and how it contributes to the work of others in immediate work context
Interact with others	1.3, 3.1, 5.4	• Selects the appropriate form, channel and mode of communication for a specific purpose relevant to own role • Cooperates with others as part of familiar routine activities and contributes to specific activities requiring joint responsibility and accountability
Get the work done	1.1, 2.1, 2.2, 2.4, 4.1-4.3, 5.1-5.3	• Takes responsibility for planning and implementing tasks required to achieve outcomes, including those times when interaction with others is • Systematically analyses and evaluates information to aid in decision making and problem solving • Applies some basic principles of lateral thinking to generate new or innovative ideas

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status

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Code and title current version	Code and title previous version	Comments	Equivalence status
BSBDES401 Generate design solutions	BSBDES401A Generate design solutions	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBDES401 Generate design solutions

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- develop and document a design solution through research, reflection, and generation and refinement of ideas
- demonstrate effective collaboration with others in the design process.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain the elements and principles of design and their application in the relevant design context
- describe key features of the wider industry, and the economic, social and historical context design solutions are being generated in
- discuss design trends and technologies including other designs and the work of other design practitioners in the relevant industry context
- identify sources of information that support the development of technical and other knowledge
- describe the materials, tools, equipment, techniques and processes used in the generation of design solutions in the relevant industry context.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the design process field of work and include access to:

- interaction with others to reflect the collaborative nature of the design process

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- sources of information on design for the relevant industry context.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBDES402 Interpret and respond to a design brief

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to interpret and creatively respond to a design brief through the production of work.

It applies to individuals working in any industry or design context where work is prescribed by a commissioning agent/client in a brief. Individuals are required to integrate the creative, communication and planning processes that support effective response to a design brief.

Work is carried out independently, although guidance is available if required.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Design – Design Process

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Interpret design brief	1.1 Correctly interpret the specifications of design brief 1.2 Establish and clarify user or client for the proposed product/service to inform design decisions 1.3 Identify and clarify specifications, parameters or constraints of design brief in consultation with relevant colleagues

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Source and evaluate information pertinent to design brief
2 Explore and develop design concept	2.1 Generate ideas for design concept through research, exploration and experimentation 2.2 Develop initial design concept consistent with design brief parameters 2.3 Evaluate and explore options for refining concept to best meet design brief parameters 2.4 Refine options and select approach which best meets design brief requirements
3 Liaise with client	3.1 Agree on communication process and frequency of communication with client 3.2 Present concepts for work at appropriate stages during design process as required 3.3 Present and explore different options and creative ideas with client when appropriate 3.4 Proactively seek and act on client feedback 3.5 Reach agreement on concept for work which complies with design brief
4 Plan production of work	4.1 Assess specific design production risks 4.2 Identify all components required to produce a prototype 4.3 Assess technical requirements for production against specified guidelines 4.4 Identify and consult with support services required for production 4.5 Produce a prototype and evaluate against design brief requirements 4.6 Analyse prototype and determine any further adjustments to production requirements 4.7 Finalise production specifications supported by accurate and complete documentation
5 Complete production of work	5.1 Collect and/or organise required components for the work 5.2 Produce or monitor the production of work ensuring all parameters of design brief are met 5.3 Accurately document work progress in a format appropriate to the nature of the design and requirements of design brief

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ELEMENT	PERFORMANCE CRITERIA
	5.4 Seek client approval for work where appropriate

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.3, 1.4, 2.1, 4.3, 4.5	• Analyses textual information to accurately interpret job specifications
Writing	1.3, 3.2-3.5, 4.4, 4.5, 4.7, 5.3, 5.4	• Uses specific industry-related terminology and appropriate formats to develop, document and amend workplace documentation
Oral Communication	1.3, 3.1-3.5, 4.4, 5.4	• Actively participates in verbal exchanges of ideas and elicits the views and opinions of others by listening and questioning • Uses clear language to clarify, explain and present information
Numeracy	1.1, 1.3, 4.5, 5.3	• Interprets numeric data and applies mathematical calculations to produce prototype according to design specification
Interact with others	1.3, 3.1-3.5, 4.4, 5.4	• Actively identifies the requirements of important communication exchanges, selecting appropriate channels, format, tone and content to suit purpose and audience • Collaborates and negotiates with others to achieve joint outcomes
Get the work done	1.1, 1.2, 2.1-2.4, 3.2, 4.1-4.3, 4.6, 4.7, 5.1, 5.2	• Takes responsibility for planning and implementing tasks required to achieve outcomes, including those times when interaction with others is • Systematically analyses and evaluates information to aid in decision making and problem solving • Applies some basic principles of lateral thinking to generate new or innovative ideas • Understands and explicitly applies some basic principles of lateral thinking to generate new or innovative ideas

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
BSBDES402 Interpret and respond to a design brief	BSBDES402A Interpret and respond to a design brief	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBDES402 Interpret and respond to a design brief

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- articulate and document the process of developing own design practice by learning to develop new skills, ideas and a unique voice
- adjust work processes via peer feedback and self-evaluation
- identify work options and incorporate networking in career development.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- list current and emerging designers in the relevant design discipline
- discuss current and emerging trends and technologies in the relevant design discipline, and the opportunities and challenges they represent
- identify professional development information and resources available to designers
- summarise sources of information relating to work opportunities and career planning.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the design process field of work and include access to materials, resources and equipment used in the development of technical and conceptual skills in the relevant design context.

Assessors must satisfy NVR/AQTF assessor requirements.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBDES403 Develop and extend design skills and practice

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to develop and extend skills as a practising designer.

It applies to individuals who work as a designer, in any industry context, either independently or employed by an organisation.

Designers must continually refine, develop and evaluate their own conceptual and technical skills. Research, experimentation and collaboration are key factors in this process.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Design – Design Process

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Acquire and develop technical skills	1.1 Plan strategies to ensure the development of appropriate technical skills in design practice 1.2 Plan and use opportunities to develop and assess technical skills 1.3 Identify and use practice, feedback, discussion and evaluation

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ELEMENT	PERFORMANCE CRITERIA
	opportunities to continuously improve technical skills 1.4 Develop and extend technical skills through testing capabilities of materials, tools and equipment 1.5 Identify and use relevant media to stimulate technical and professional development
2 Develop conceptual skills and ideas	2.1 Engage in ongoing experimentation and exploration of different ideas and techniques 2.2 Discuss ideas with others and apply knowledge gained to inform own work 2.3 Use work practice to gain experience in a range of genres and interpretations 2.4 Study the work of others to stimulate conceptual and technical skills development 2.5 Research and share ideas across a range of design disciplines 2.6 Identify and use a range of opportunities to develop own skills and keep informed about current design practice
3 Develop own voice	3.1 Explore and experiment with new ideas in making and/or interpreting design work 3.2 Explore and use technology, where appropriate, to develop own voice and expand practice 3.3 Demonstrate own voice through design project realisation implementation
4 Evaluate own work	4.1 Seek and apply constructive criticism from others to improve own work 4.2 Evaluate own work against planned strategy for own practice 4.3 Evaluate own work in the context of work by others to extend own practice 4.4 Adjust work processes and practice as necessary to improve technical, conceptual and commercial outcomes
5 Research work opportunities	5.1 Correctly identify sources of information relating to work opportunities for designers 5.2 Identify networks and promotional opportunities for designers which may be helpful in developing career opportunities 5.3 Incorporate research results and information into own work and career planning

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Learning	1.1-1.5, 2.2, 2.4, 2.6, 3.2, 4.1-4.3	• Uses practical strategies to identify and implement improvements in own creative skills and technical design skills and practice
Reading	1.5, 2.4, 2.5, 5.1-5.3	• Researches and evaluates a variety of textual information from a wide range of sources
Writing	2.5, 4.1, 5.3	• Uses clear and specific language to document ideas, feedback and research results
Oral Communication	1.3, 2.2, 2.5, 4.1	• Participates in a range of verbal exchanges and presentations using appropriate tone and vocabulary to suit the audience • Uses active listening and questioning techniques to clarify and confirm understanding
Navigate the world of work	1.2, 1.3, 2.3, 4.1, 5.2	• Recognises the importance of developing technical skills and of learning from feedback and self-reflection • Begins to broaden areas of interest and focus, seeking new challenges and recognising that expertise can be adapted and applied in diverse contexts
Interact with others	2.5, 4.1, 5.2	• Begins to cultivate relationships with people with the knowledge, skills and influence to provide collaborative support
Get the work done	1.1, 1.2, 1.4, 1.5, 2.1, 2.3, 2.6, 3.1-3.3, 4.2, 4.4, 5.1	• Takes responsibility for planning and implementing tasks required to achieve outcomes, including those times when interaction with others is • Systematically analyses and evaluates information to aid in decision making and problem solving • Applies some basic principles of lateral thinking to generate new or innovative ideas • Recognises the potential of new approaches to enhance work practices and outcomes • Evaluates effectiveness of decisions on how well they meet stated goals • Understands key principles and concepts underpinning the design and operation of digital systems and applies these when seeking to understand the potential of new technology

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
BSBDES403 Develop and extend design skills and practice	BSBDES403A Develop and extend design skills and practice	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBDES403 Develop and extend design skills and practice

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- use strategies to develop or extend skills, ideas and a unique voice
- adjust work processes as a result of peer feedback and self-evaluation
- research work options, networking and promotional opportunities and incorporate information into own work and career development.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- list current and emerging designers in the relevant design discipline
- discuss current and emerging trends and technologies in the relevant design discipline, and the opportunities and challenges they represent
- identify professional development information and resources available to designers
- summarise sources of information relating to work opportunities and career planning.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the design process field of work and include access to materials, resources and equipment used in the development of technical and conceptual skills in the relevant design context.

Assessors must satisfy NVR/AQTF assessor requirements.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBDES501 Implement design solutions

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to take a design concept or solution to the implementation stage. The outcome of work could be a completed product, object, system or service, but is more likely to be a complete or partial prototype or model for the design. The focus of the unit is on a general knowledge of design techniques and processes, and practical application to a specific design context.

It applies to individuals who implement concepts and solutions in response to a design challenge in any industry context.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Design – Design Process

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Organise resources for realising the design solution	1.1 Confirm the nature and scope of the proposed design solution 1.2 Research resources required for developing the design concept to implementation stage 1.3 Investigate different factors impacting the selection and use of resources 1.4 Select and prepare resources based on research and other

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ELEMENT	PERFORMANCE CRITERIA
	legislative or organisational requirements
2 Test the design solution	2.1 Experiment with a range of different techniques and processes to test the design solution 2.2 Evaluate, challenge and refine testing processes 2.3 Gain input and feedback from key stakeholders during testing 2.4 Accurately document outcomes of testing 2.5 Select final design solution based on outcomes of testing and input from others
3 Develop prototype or model	3.1 Create prototype or model based on agreed approaches 3.2 Select and organise materials, tools and equipment, where appropriate, according to chosen design solution 3.3 Expose model or prototype to quality checks and ongoing analysis, enhancement and refinement 3.4 Compare completed prototype or model against identified needs and other considerations and make adjustments as required
4 Present prototype or model	4.1 Identify key stakeholders design should be presented to 4.2 Select appropriate format for presentation based on nature of audience and design 4.3 Present prototype or model to optimise clarity, conciseness and appeal

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.4, 3.4	• Researches and accurately interprets textual information from a wide range of sources
Writing	1.2, 1.3, 2.3, 2.4, 3.4, 4.3	• Documents research, resource requirements and testing outcomes using appropriate language and formats
Oral Communication	1.1, 2.3, 4.3	• Participates in a range of verbal exchanges and presentations using appropriate tone and vocabulary to suit audience

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		• Uses active listening and questioning techniques to gain input and feedback
Numeracy	1.1-1.3, 2.4, 2.5	• Interprets and applies numeric information relevant to design solution • Compares numerical data gathered from testing
Navigate the world of work	1.4	• Understands and adheres to organisational policies, procedures and legislative requirements during planning and implementation of design solution
Interact with others	4.3	• Recognises importance of taking audience, purpose and contextual factors into account when making decisions about what to communicate, with whom, why and how
Get the work done	1.1-1.4, 2.1, 2.2, 2.5, 3.1-3.4, 4.1, 4.2	• Sequences and schedules routine and complex activities, monitors implementation, and manages relevant communication • Applies formal problem-solving processes when responding to unpredictable issues and challenges that arise during the testing process • Makes a range of critical and non-critical decisions in relatively complex situations, taking client requirements and range of constraints into account • Creates new or innovative ideas through exploration, analysis and critical thinking

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBDES501 Implement design solutions	BSBDES501A Implement design solutions	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBDES501 Implement design solutions

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- undertake critical analysis, testing and development of a model, prototype or aspect of a design solution to meet an identified need
- present model to key stakeholders using the most appropriate best practice methods.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain the elements and principles of design and their application in relevant design context
- describe key features of the wider industry, with the economic, social and historical context for the design solution
- discuss design trends and technologies including other designs and the work of other design practitioners in the relevant context
- summarise sources of information that support the development of technical and other knowledge
- describe the technical expertise, resources, materials, tools, equipment, techniques and industry processes required for the area the design solutions are being implemented in.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the design process field of work and include access to:

- other people to reflect the collaborative nature of the design process

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- resources required to test a design solution in a given industry context including materials, tools, equipment and expertise.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

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BSBDES502 Establish, negotiate and refine a design brief

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to work proactively with a client or commissioning organisation to develop and negotiate a design brief.

It applies to individuals working in any industry or design context where the designer plays a key role in determining the scope and nature of work required. Establishment, negotiation and refinement of a design brief requires the integration of highly-developed creative thinking, communication and planning skills in a process that may not be linear. Adaptability and effective responses to change and new ideas are crucial.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Design – Design Process

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Establish design requirements	1.1 Identify and make appropriate contact with relevant stakeholders for the design project, in addition to the client 1.2 Identify and source information and references relevant to the design project 1.3 Undertake critical analysis of sources and extract key information to inform the design project

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Liaise with client and other key stakeholders to determine overall objectives and parameters for the design project 1.5 Proactively seek, review and act on information needed to inform constructive communication with client 1.6 Build trust and respect between self and client through effective communication and demonstration of professional integrity
2 Develop and refine design brief	2.1 Develop concepts and ideas for inclusion in design brief, taking account of overall objectives and parameters 2.2 Undertake own analysis of concept and challenge ideas and approaches taken to ensure responsiveness to project needs 2.3 Present ideas in an appropriate format/medium and seek feedback from key stakeholders 2.4 Use effective communication techniques to generate discussion, debate and critical analysis 2.5 Re-evaluate and refine options based on own analysis and discourse with others 2.6 Establish and agree on final nature and scope of design brief with client and accurately document details
3 Negotiate terms and conditions	3.1 Negotiate and agree terms and conditions of brief in accordance with relevant organisational and professional standards 3.2 Clarify, agree and document roles and responsibilities of those involved in the project 3.3 Confirm agreements in writing in accordance with organisational requirements 3.4 Identify the need for specialist advice when developing formal agreements or contracts, and seek appropriate assistance

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.2, 1.3, 2.2, 2.5	• Identifies and interprets textual information from

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		various sources to develop ideas and concepts
Writing	1.1, 1.3-1.5, 2.1-2.3, 2.6, 3.1-3.3	• Develops a range of documents using appropriate vocabulary, context and formatting for different audiences
Oral Communication	1.1, 1.4-1.6, 2.3, 2.4, 2.6, 3.1, 3.2	• Participates in discussions to elicit views of others by asking questions and listening to responses • Presents ideas and seeks feedback from others using appropriate tone, vocabulary and language structures
Numeracy	1.2-1.4	• Interprets and applies numeric information relevant to design brief
Navigate the world of work	1.2, 1.3, 3.1, 3.3, 3.4	• Identifies and adheres to organisational policies and procedures, industry standards and legislative requirements during planning and design of design solution
Interact with others	1.1, 1.4-1.6, 2.3, 2.4, 2.6, 3.1, 3.4	• Uses appropriate communication conventions and protocols to seek information from stakeholders • Uses a range of collaborative techniques to clarify and refine ideas and negotiate agreeable outcomes with others
Get the work done	1.1-1.3, 1.5, 2.1, 2.2, 2.5, 3.2	• Sequences and schedules complex activities, monitors implementation, and manages relevant communication • Applies formal problem-solving processes when responding to unpredictable issues and challenges that arise during the testing process • Makes a range of critical and non-critical decisions in relatively complex situations, taking client and organisational requirements and possible constraints into account • Generates new or innovative ideas or concepts through exploration, analysis and critical thinking

Range of Conditions

This section specifies different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Information and references relevant to the design brief must include consideration of:	• legislative and regulatory context • financial/budgetary information • organisational materials • technical reports/data.

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
BSBDES502 Establish, negotiate and refine a design brief	BSBDES502A Establish, negotiate and refine a design brief	Updated to meet Standards for Training Packages Minor edit to clarify meaning of PC 3.4	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBDES502 Establish, negotiate and refine a design brief

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- develop and finalise at least TWO design briefs for a specific industry purpose
- demonstrate highly-developed interpersonal skills, self-evaluation techniques and the ability to seek expert advice when required.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- discuss the legal issues that affect negotiations and contracts in the relevant work context
- explain the design process within the specific industry context/design discipline
- compare and contrast the scope, nature and potential variations that occur within design briefs relevant to a specific context
- identify sources of information to assist the development of design concepts within a specific industry context.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the design process field of work and include access to:

- appropriate equipment and media to communicate and present ideas and concepts
- sources of information relevant to industry context
- interaction with others to reflect the collaborative nature of the work, and communication and negotiation skills required.

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Assessors must satisfy NVR/AQTF assessor requirements.

Links

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BSBDES601 Manage design realisation

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to manage the process of taking a design from concept to final realisation or production. It has a strong focus on planning, implementation and monitoring skills, combined with a sound knowledge of design and production issues and challenges in a given context.

It applies to individuals working in any industry context or design discipline who take responsibility for turning design concept into reality – a product or service of value to the end-user. This person could be an individual designer-maker or a designer working as part of a larger design/production team.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Design – Design Process

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Plan realisation of design	1.1 Collect, analyse and maintain relevant information on the design 1.2 Discuss and agree on standards of work and monitoring requirements with appropriate stakeholders 1.3 Develop clear plan and schedule for design realisation,

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ELEMENT	PERFORMANCE CRITERIA
	including key roles and responsibilities linked to timelines and budget
2 Implement and monitor realisation of design	2.1 Organise and/or allocate resources to achieve realisation of design within required standards, timeframes and budget 2.2 Liaise with others involved in design realisation to ensure obligations and quality standards are met within time, budget and technical resources 2.3 Maintain accurate, relevant and complete documentation in accordance with agreed standards 2.4 Monitor process to ensure integrity of design is maintained at all times, including through the process of challenging and interrogating own design work 2.5 Promptly identify difficulties or problems that arise in relation to realisation of design and take action to rectify situation
3 Liaise and negotiate with stakeholders	3.1 Establish and maintain appropriate communication channels with relevant stakeholders 3.2 Proactively seek and provide information to facilitate effective design realisation 3.3 Adhere to agreed terms and conditions or negotiate appropriate changes in light of changed circumstances 3.4 Negotiate and agree on revisions with relevant parties in a professional manner, to enhance quality of outcome
4 Complete design process	4.1 Finalise design outcomes in accordance with terms and conditions 4.2 Seek feedback from key stakeholders on finished design and make final adjustments as agreed 4.3 Evaluate completed design in relation to own work and overall process, to inform future practice

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description

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Reading	1.1, 2.3	• Collates and analyses textual information from a range of sources relevant to the design realisation
Writing	2.3, 3.1, 3.2, 4.3	• Produces documentation using appropriate structure, language and context to articulate own ideas and positions
Oral Communication	1.2, 3.2-3.4, 4.2	• Articulates clearly using specific language and appropriate tone to convey information • Uses active questioning and listening techniques to confirm understanding
Numeracy	1.3, 2.1	• Interprets and uses numeric information in budgets and to determine work schedules
Navigate the world of work	2.3, 3.3, 4.1	• Works independently and collectively within broad parameters, with a strong sense of responsibility and ownership of plans, decisions and outcomes • Adheres to organisational policies and procedures
Interact with others	1.2, 2.2, 3.1, 3.2, 3.4	• Recognises the importance of taking audience, purpose and contextual factors into account when making decisions about what to communicate, with whom, why and how • Fosters a collaborative culture within own sphere of influence, facilitating a sense of cohesion and commitment
Get the work done	1.1, 1.3, 2.1, 2.4, 2.5	• Takes responsibility for planning and organising tasks to meet workplace deadlines, including those tasks that require liaison with other people • Applies formal problem-solving processes when responding to unpredictable issues and challenges that arise during the design process • Uses each experience to reflect on how variables impact outcomes to inform future practices

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBDES601 Manage design realisation	BSBDES601A Manage design realisation	Updated to meet Standards for Training Packages	Equivalent unit

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Links

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Assessment Requirements for BSBDES601 Manage design realisation

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- produce a design according to all brief requirements
- demonstrate highly-developed interpersonal and negotiation skills to deliver the finished product.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline key responsibilities of relevant personnel in this context
- describe best practices when dealing with setbacks in the production process
- explain production processes in a particular industry context or discipline including required materials, tools and equipment.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the design process field of work and include access to:

- resources, tools, materials and equipment required for realising a design in a specific context
- a design concept that the candidate can take to realisation stage
- other people to reflect the collaborative nature of the work.

Assessors must satisfy NVR/AQTF assessor requirements.

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BSBDES602 Research global design trends

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to research and critically evaluate global design trends. The focus is on research and analysis of information and ideas at a complex level, plus the evaluation and extension of the individual's professional skills.

It applies to individuals who need to maintain a current and comprehensive knowledge of global design trends to inform their own professional practice. Although predominantly for designers, this unit may also be relevant to those who work in related management, marketing and production areas.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Design – Design Process

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Research design trends	1.1 Analyse and select formal and informal research strategies to source information on global design trends 1.2 Identify and explore new and alternative sources 1.3 Evaluate the credibility of information gathered and ensure research scope is sufficiently broad

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ELEMENT	PERFORMANCE CRITERIA
2 Analyse design trends to inform own practice	2.1 Use information to challenge and extend own perspectives and ways of thinking 2.2 Examine and assess implications and consequences of design trends on own work 2.3 Use critical analysis to identify creative or commercial opportunities presented by emerging trends and technologies 2.4 Develop systems to identify and respond to future opportunities
3 Develop and articulate positions and ideas	3.1 Develop substantiated positions and ideas on global design trends 3.2 Generate informed discussion, debate and critical analysis with peers and colleagues 3.3 Use debate and feedback to challenge and refine own positions
4 Extend own design skills	4.1 Proactively identify and use opportunities presented by research to extend own design skills 4.2 Re-evaluate and refine approaches to work in the context of current and emerging trends 4.3 Use practice, discussion and ongoing evaluation to continuously improve skills

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Learning	4.1-4.3	• Plans and implements strategies to improve and extend own knowledge and skills
Reading	1.1-1.3, 2.1, 2.2	• Analyses and synthesises complex and varied information from a range of sources
Writing	2.4	• Documents methods for identifying future opportunities using vocabulary and structure appropriate to context and purpose
Oral Communication	3.2, 3.3, 4.3	• Elicits the views others by participating in critical discourse and debate on conceptual and technical

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		design trends • Uses active listening techniques to gain input and feedback
Navigate the world of work	2.3	• Keeps abreast of trends and issues, appreciating the world of work is dynamic, with changing needs and priorities, and that career development is not a linear process that can be closely controlled
Get the work done	1.1-1.3, 2.1-2.4, 3.1, 3.3, 4.2	• Takes responsibility for planning and organising tasks required to conduct required research, including how to link with the work of others • Keeps abreast of innovations and good practice beyond own context, borrowing, adapting, combining and redesigning for own purposes • Uses reflection and feedback from others to evaluate outcomes to inform future practices • Actively identifies digital systems, devices and applications with potential to meet current and/or future needs

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBDES602 Research global design trends	BSBDES602A Research global design trends	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBDES602 Research global design trends

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- conduct research on a complex range of design issues, trends and ideas
- document the analysis, critique and synthesis of complex sources to develop own positions and ideas
- use opportunities to refine own design skills.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe broad global design trends that apply to all design disciplines
- discuss the business implications/consequences of adopting trends and emergent technologies
- compare and contrast different research methodologies and options
- outline sources of information on global design, design trends and broader references that may inform emerging and innovative design practice
- critique specific current and emerging design technologies and trends (at a global level) in at least one area of design.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the design process field of work and include access to a current and varied range of familiar and unfamiliar information sources.

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Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBEBU401 Review and maintain a website

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to undertake data analysis, review website content, and update and maintain a website.

It applies to individuals who have knowledge of the relationship between a website and the core functions of an organisation. They also have working knowledge and skills to perform basic updates to website content. They may provide administrative support within an organisation or be other individuals who have been delegated this responsibility.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Information and Communications Technology – E-Business

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Review website content and use	1.1 Monitor and analyse customer and user feedback in accordance with organisational timelines 1.2 Analyse automatically collected website data and identify trends 1.3 Make recommendations on changes to website and its content in response to feedback and data analysis, and approve changes scheduled for implementation

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ELEMENT	PERFORMANCE CRITERIA
	1.4 Review cost implications of the recommended changes to determine their viability
2 Update website	2.1 Replace superseded and inaccurate information with current information and add additional material in accordance with organisational requirements 2.2 Follow protocols for ensuring the accuracy and authenticity of information 2.3 Remove services no longer available or required and add new ones in accordance with organisational requirements 2.4 Check offline information against that posted on the website and rectify any discrepancies in accordance with organisational timelines 2.5 Follow security procedures for updating the website
3 Carry out non-technical site maintenance	3.1 Analyse user feedback to confirm website faults are not user issues 3.2 Rectify faults and make improvements to website in response to user feedback approved by the organisation 3.3 Add new web pages and/or active links and remove redundant pages and links in accordance with organisational requirements 3.4 Make website changes in response to changes in marketing strategy, in accordance with organisational requirements and consideration of cost benefits

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.4, 2.1, 2.3-2.5, 3.1-3.4	• Recognises text within job specifications and work processes related to the outcomes of the job
Writing	1.3, 1.4, 2.1-2.5, 3.2-3.4	• Records key information related to the outcomes of the job

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Oral Communication	1.3, 3.2	• Makes recommendations on changes to website content • Analyses and responds to user feedback
Numeracy	1.4	• Uses basic numeracy skills to determine cost implications and viability
Navigate the world of work	1.1-1.4, 2.1-2.5, 3.1-3.4	• Accepts responsibility and ownership for the task and makes decisions on completion parameters and the need to coordinate with others • Takes personal responsibility for following security procedures and meeting organisational requirements
Interact with others	1.3, 3.2	• Selects and uses appropriate conventions and protocols when communicating with clients and users in a range of work contexts
Get the work done	1.1-1.4, 2.1-2.5, 3.1-3.4	• Takes responsibility for planning, sequencing tasks for efficient and effective organisational outcomes • Uses problem solving processes to identify and analyse technical issues • Contributes to continuous improvement of website by applying basic principles of analytical thinking • Understands the purposes, specific functions and key features of common digital systems and tools and operates them effectively to complete tasks in accordance with security requirements

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBEBU401 Review and maintain a website	BSBEBU401A Review and maintain a website	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBEBU401 Review and maintain a website

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- analyse data to make recommendations about changes to website
- update web pages according to organisational requirements
- analyse data, identify and resolve faults, errors and/or complaints on website.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify and review knowledge of key provisions of relevant legislation, regulations, and standards and codes of practice that may affect aspects of business operations
- explain basic principles of website design and maintenance
- outline online security issues.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the information and communications technology – e-business field of work. This includes access to:

networked computers

- computers and office equipment
- industry software packages
- documentation relating to analysis and strategies/policies for implementation.

Assessors must satisfy NVR/AQTF assessor requirements.

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BSBFIM501 Manage budgets and financial plans

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to undertake financial management within a work team in an organisation. It includes planning and implementing financial management approaches, supporting team members whose role involves aspects of financial operations, monitoring and controlling finances and reviewing and evaluating effectiveness of financial management processes.

It applies to managers in a wide range of organisations and sectors who have responsibility for ensuring that work team financial resources are used effectively and are managed in line with financial objectives of the team and organisation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Finance - Financial Management

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Plan financial management approaches	1.1 Access budget/financial plans for the work team 1.2 Clarify budget/financial plans with relevant personnel within the organisation to ensure that documented outcomes are achievable, accurate and comprehensible 1.3 Negotiate any changes required to be made to budget/financial

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ELEMENT	PERFORMANCE CRITERIA
	plans with relevant personnel within the organisation 1.4 Prepare contingency plans in the event that initial plans need to be varied
2 Implement financial management approaches	2.1 Disseminate relevant details of the agreed budget/financial plans to team members 2.2 Provide support to ensure that team members can competently perform required roles associated with the management of finances 2.3 Determine and access resources and systems to manage financial management processes within the work team
3 Monitor and control finances	3.1 Implement processes to monitor actual expenditure and to control costs across the work team 3.2 Monitor expenditure and costs on an agreed cyclical basis to identify cost variations and expenditure overruns 3.3 Implement, monitor and modify contingency plans as required to maintain financial objectives 3.4 Report on budget and expenditure in accordance with organisational protocols
4 Review and evaluate financial management processes	4.1 Collect and collate for analysis, data and information on the effectiveness of financial management processes within the work team 4.2 Analyse data and information on the effectiveness of financial management processes within the work team and identify, document and recommend any improvements to existing processes 4.3 Implement and monitor agreed improvements in line with financial objectives of the work team and the organisation

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 2.1, 2.3, 3.1-3.4, 4.2, 4.3	• Interprets and analyses information to determine activities required

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Writing	1.1, 1.4, 4.1-4.3	• Records information in correct forms and prepares materials which convey detailed and factual content in accordance with internal procedures
Oral Communication	1.2, 1.3, 2.1-2.3	• Presents information about financial issues and requirements to a range of audiences using structure and language to suit the audience • Uses active listening and questioning to clarify information and to confirm understanding
Numeracy	1.1-1.3, 2.1-2.3, 3.1-3.4, 4.1-4.3	• Uses a wide range of mathematical calculations to analyse numeric information in budgets or financial plans
Navigate the world of work	2.2, 3.3, 3.4, 4.3	• Recognises, understands and adheres to organisational requirements in undertaking own work
Interact with others	1.2, 1.3, 2.1, 2.2, 3.1, 2.3, 4.2, 4.3	• Uses a range of strategies to connect, collaborate and cooperate with other work colleagues in activities requiring collective effort and diverse skills and knowledge
Get the work done	1.1, 1.4, 2.3, 3.1-3.4, 4.1-4.3	• Uses logical processes in planning, implementing and evaluating complex tasks and developing alternative strategies in achieving goals and timelines • Uses a range of digital technologies to access, filter, compile, integrate and logically present complex information from multiple sources

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBFIM501 Manage budgets and financial plans	BSBFIM501A Manage budgets and financial plans	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBFIM501 Manage budgets and financial plans

Modification History

Release	Comments
Release 1	This version first released with Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- use financial skills to work with and interpret budgets, ageing summaries, cash flow, petty cash, Goods and Services Tax (GST), and profit and loss statements
- communicate with relevant people to clarify budget/financial plans, negotiate changes and disseminate information
- prepare, implement and modify financial contingency plans
- monitor expenditure and control costs
- support and monitor team members
- report on budget and expenditure
- review and make recommendations for improvements to financial processes
- meet record keeping requirements for the Australian Taxation Office (ATO) and for auditing purposes.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe basic accounting principles
- identify and explain the relevant legislation and current requirements of the Australian Taxation Office, including the Goods and Services Tax (GST)
- explain the key requirements for financiall record keeping and auditing
- describe the principles and techniques involved in managing:
  - budgeting
  - cash flows
  - electronic spreadsheets

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- GST
- ledgers and financial statements
- profit and loss statements.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the financial management field of work and include access to:

- resources and documentation used in the workplace
- workplace policies and procedures
- workplace budgets and financial plans
- business technology
- case studies and, where available, real situations.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBINN601 Lead and manage organisational change

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes skills and knowledge required to determine strategic change requirements and opportunities; and to develop, implement and evaluate change management strategies.

It applies to managers with responsibilities that extend across the organisation or across significant parts of a large organisation. They may have a dedicated role in human resources management, human resources development, or work in a strategic policy or planning area.

The unit takes a structured approach to change management and applies to people with considerable work experience and organisational knowledge.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Creativity and innovation – innovation

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Identify change requirements and opportunities	1.1 Identify strategic change needs through an analysis of organisational objectives 1.2 Review existing policies and practices against strategic objectives to identify where changes are required

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ELEMENT	PERFORMANCE CRITERIA
	1.3 Monitor the external environment to identify events or trends that impact on the achievement of organisational objectives 1.4 Identify major operational change requirements due to performance gaps, business opportunities or threats, or management decisions 1.5 Review and prioritise change requirements or opportunities with relevant managers 1.6 Consult stakeholders, specialists and experts to assist in the identification of major change requirements and opportunities
2 Develop change management strategy	2.1 Undertake cost-benefit analysis for high priority change requirements and opportunities 2.2 Undertake risk analysis and apply problem solving and innovation skills to identify barriers to change and agree and record mitigation strategies 2.3 Develop change management project plan 2.4 Obtain approvals from relevant authorities to confirm the change management process 2.5 Assign resources to the project and agree reporting protocols with relevant managers
3 Implement change management strategy	3.1 Develop communication or education plan, in consultation with relevant groups and individuals, to promote the benefits of the change to the organisation and to minimise loss 3.2 Arrange and manage activities to deliver the communication or education plans to relevant groups and individuals 3.3 Consult with relevant groups and individuals for input into the change process 3.4 Identify and respond to barriers to the change according to risk management plans 3.5 Action interventions and activities set out in project plan according to project timetable 3.6 Activate strategies for embedding the change 3.7 Conduct regular evaluation and review and modify project plan where appropriate to achieve change program objectives

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 2.1, 2.2	• Interprets detailed information that may deal with complex ideas related to issues both within and outside the workplace context
Writing	2.1, 2.2, 2.3, 2.4, 3.1	• Uses clear and precise language to develop information about objectives, requirements, activities and recommendations • Develops complex plans and strategies in appropriate format for the audience and purpose
Oral Communication	1.6, 2.2, 2.4, 2.5, 3.3	• Discusses and seeks information using appropriate structure and language for the particular audience • Uses questioning and active listening to clarify or confirm understanding
Numeracy	2.1, 2.3, 2.3	• Interprets, analyses and presents numeric/financial information in complex documents
Navigate the world of work	1.1-1.6, 2.4, 2.5, 3.1, 3.2	• Takes a lead role in the development of organisational strategic goals and associated roles and responsibilities
Interact with others	1.5, 1.6, 2.4, 2.5, 3.1-3.3	• Uses a variety of communication tools and strategies to build and maintain effective working relationships • Uses inclusive and collaborative techniques to seek feedback, negotiate and consult with a range of stakeholders
Get the work done	1.1-1.5, 2.1-2.5, 3.1, 3.2, 3.4-3.7	• Plans, organises and implements activities required to achieve strategic priorities and outcomes, including consulting with others and sequencing events to minimise uncertainty for staff • Uses problem-solving skills to identify and analyse issues or barriers, and develop responses • Develops new and innovative ideas through exploration and lateral thinking

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status

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Code and title current version	Code and title previous version	Comments	Equivalence status
BSBINN601 Lead and manage organisational change	BSBINN601B Manage organisational change	Updated to meet Standards for Training Packages Edits to clarify intent of Performance Criteria Title change	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBINN601 Lead and manage organisational change

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- analyse and interpret information about the organisation's internal and external environment and consult with stakeholders to identify requirements and opportunities for changes that support organisational objectives
- prioritise opportunities for changes with input from managers
- develop a change management project plan for the priority changes incorporating resource requirements, risk management and timelines
- develop strategies to communicate or educate the changes and embed them
- obtain approvals and agree reporting protocols with relevant managers and implement the plan including addressing barriers to change
- review and evaluate the change management project plan and modify as needed to achieve objectives.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain the change management process or cycle and strategies for communicating and embedding change
- explain how organisational behaviour and the external environment can impact on change strategies
- describe the components of a change management project plan
- list potential barriers to change and explain possible strategies to address barriers.

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Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the creativity and innovation and include access to:

- workplace documentation and resources
- office equipment, materials and software packages
- case studies or, where available, real situations
- interaction with others.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBINN801 Lead innovative thinking and practice

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to generate, lead and sustain innovative organisational thinking and practice.

It applies to individuals who initiate and lead innovation in any industry or community context. Each organisation's thinking and practice will be different depending on its core business, purpose, size, complexity and broader operating context.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Creativity and Innovation – Innovation

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Generate innovative thinking and creativity	1.1 Research and use a range of techniques and tools to generate new ideas and thinking 1.2 Research and analyse trends shaping organisation's current and future thinking and practice 1.3 Introduce and promote creative thinking techniques to foster personal and team innovation 1.4 Evaluate overall context for individual and collective

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ELEMENT	PERFORMANCE CRITERIA
	innovative thinking and creativity 1.5 Research and analyse specific conditions for innovation and issues that impact on individual and collective innovative thinking and creativity 1.6 Research and review innovation drivers and enablers
2 Lead innovative practices	2.1 Develop personal leadership style to model positive innovative thinking and practice 2.2 Review, challenge and refine own style and practice in relation to modelling and supporting innovation 2.3 Assess and determine the requirements to promote sustainable innovative activity for the operational context and people involved 2.4 Devise and implement most appropriate means to promote knowledge transfer 2.5 Identify, evaluate and manage risks associated with innovation within an organisation
3 Generate and support a culture of innovation	3.1 Introduce and promote innovative practices, processes, products or services appropriate to audience and organisational requirements 3.2 Establish ways to capture, communicate and share innovative ideas and practices 3.3 Initiate and foster communication, consultation and team development approaches that support innovation 3.4 Identify, assess and provide adequate resources for innovation to occur 3.5 Develop and apply strategies to foster a workplace culture capable of encouraging innovation 3.6 Establish mechanisms at system and process level that can support innovation
4 Sustain innovative thinking and practice	4.1 Develop strategies to make innovation an integral part of organisational activity 4.2 Develop and monitor processes to ensure ongoing awareness of individual and collective contributions to innovative thinking and practice 4.3 Analyse potential barriers and risks to innovation and devise strategies to respond 4.4 Analyse and reflect on innovation performance as a basis for developing strategies for improvement

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Learning	2.1, 2.2, 4.4	• Evaluates and reflects on personal effectiveness to develop strategies to enhance own performance
Reading	1.1, 1.2, 1.5, 1.6	• Identifies, analyses, interprets and evaluates visual and textual information from a range of sources to identify innovation strategies, practices and trends
Writing	1.1, 1.2, 1.5, 1.6, 3.2	• Uses clear and precise language to document research findings for reference purposes • Develops complex plans, strategies and systems to integrate innovation into the organisation using appropriate formats for the audience and purpose
Oral Communication	1.3, 3.2, 3.3, 3.5	• Discusses, presents and seeks information using appropriate structure and language for the particular audience • Uses questioning and active listening to encourage discussion and to clarify or confirm understanding
Numeracy	1.1, 1.2, 1.5, 1.6, 3.2	• Interprets, analyses and presents numeric/financial information in complex documents
Navigate the world of work	2.1, 2.2, 2.3, 2.5, 3.1, 3.5, 4.1	• Understands how own role meshes with others and contributes to broader work goals • Leads in the development of strategies to integrate innovative practices into the organisation
Interact with others	1.3, 3.2, 3.3, 3.5	• Uses a variety of relevant communication tools and strategies to build and maintain effective working relationships • Uses inclusive and collaborative techniques to communicate, negotiate and consult effectively with a range of stakeholders • Actively seeks the perspectives of others as part of work role
Get the work done	1.1,1.2, 1.3-1.6, 2.3-2.5, 3.2-3.6, 4.1-4.4	• Plans, develops, implements and monitors practical strategies to introduce and support innovation in the workplace • Develops new and innovative ideas through exploration, evaluation, analysis and critical thinking

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		• Uses formal analytical and lateral thinking techniques to identify issues, generate and evaluate possible solutions, and select most appropriate option

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBINN801 Lead innovative thinking and practice	BSBINN801A Lead innovative thinking and practice	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBINN801 Lead innovative thinking and practice

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- use various techniques and tools to stimulate creative or innovative thinking
- research, review and critically analyse trends in thinking and emerging practices as they relate to an organisation's current thinking and practices
- develop own capacity to lead innovative thinking and practice in an organisational context
- complete a workplace project or case study to demonstrate a comprehensive understanding and application of key concepts, current theories and processes for introducing, communicating, promoting, supporting and sustaining innovative thinking and practices in an organisational context.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- compare and contrast current and past theories and thinking about innovation
- explain how theory and thinking on innovation and creativity can contribute to applied practice
- discuss the impact of leadership style on innovation in organisations, including how specific approaches may encourage or inhibit innovation
- discuss the relevance of organisational and industry context on innovation
- analyse the internal and external conditions or factors that impact on organisational innovation
- outline strategies for identifying, assessing and managing risks associated with innovation
- provide examples of innovation drivers in an organisation
- provide examples of innovation enablers in an organisation

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- list and describe mechanisms at system or process level that can support innovative practices
- discuss typical challenges and barriers to innovation within an organisation and ways of overcoming these challenges and barriers.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the creativity and innovation field of work and include access to:

- workplace documentation and resources
- office equipment and materials
- case studies or, where available, real situations
- interaction with others.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBLDR402 Lead effective workplace relationships

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit defines skills, knowledge and outcomes required to use leadership to promote team cohesion. It includes motivating, mentoring, coaching and developing the team and forming the bridge between the management of the organisation and team members.

This unit applies to team leaders, supervisors and new or emerging managers where leadership plays a role in developing and maintaining effective workplace relationships. It applies in any industry or community context.

At this level work will normally be carried out within routine and non-routine methods and procedures, which require planning and evaluation and leadership and guidance of others.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Management and Leadership - Leadership

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Collect, analyse and communicate information and ideas	1.1 Collect relevant information from appropriate sources and analyse and share with the work team to improve work performance 1.2 Communicate ideas and information in a manner which is appropriate and sensitive to the cultural and social diversity of the

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ELEMENT	PERFORMANCE CRITERIA
	audience and any specific needs 1.3 Lead consultation processes to encourage employees to contribute to issues related to their work, and promptly relay feedback to the work team in regard to outcomes 1.4 Seek and value contributions from internal and external sources in developing and refining new ideas and approaches 1.5 Implement processes to ensure that issues raised are resolved promptly or referred to relevant personnel as required
2. Develop trust and confidence as leader	2.1 Treat all internal and external contacts with integrity, respect and empathy 2.2 Use the organisation's social, ethical and business standards to develop and maintain effective relationships 2.3 Gain and maintain the trust and confidence of colleagues, customers and suppliers through competent performance 2.4 Adjust interpersonal styles and methods to meet organisation's social and cultural environment 2.5 Lead and encourage other members of the work team to follow examples set according to organisation's policies and procedures
3. Develop and maintain networks and relationships	3.1 Use networks to identify and build relationships 3.2 Use networks and other work relationships to provide identifiable benefits for the team and organisation
4. Manage difficulties into positive outcomes	4.1 Identify and analyse difficulties and take action to rectify the situation within the requirements of the organisation and relevant legislation 4.2 Guide and support colleagues to resolve work difficulties 4.3 Regularly review and improve workplace outcomes in consultation with relevant personnel 4.4 Manage poor work performance within the organisation's processes 4.5 Manage conflict constructively within the organisation's processes

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

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Skill	Performance Criteria	Description
Reading	1.1	• Collects, analyses and evaluates textual information from a range of resources to inform improvement strategies
Oral Communication	1.2, 1.3, 2.4, 2.5, 4.2	• Selects or adjusts communication style to maintain effectiveness of interaction and build and maintain engagement consistent with organisational requirements
Navigate the world of work	2.2, 2.5, 4.1, 4.4, 4.5	• Recognises and follows legislative and organisational requirements relevant to own role
Interact with others	1.1-1.4, 2.1, 2.3, 2.5, 3.1, 3.2, 4.2, 4.5	• Selects and uses appropriate conventions and protocols when communicating with diverse stakeholders • Adapts personal communication style to build trust and positive working relationships and to show respect for the opinions, values and particular needs of others • Plays a lead role in situations requiring effective collaboration, demonstrating conflict resolution skills and ability to engage and motivate others
Get the work done	1.1, 1.5, 4.1, 4.3	• Plans and implements activities and processes to manage and review work performance • Systematically gathers and analyses all relevant information to formulate and evaluate possible solutions to difficulties

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
BSBLDR402 Lead effective workplace relationships	BSBWOR401A Establish effective workplace relationships	Updated to meet Standards for Training Packages Title change Minor edits to clarify intent of performance criteria	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBLDR402 Lead effective workplace relationships

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- access and analyse information to achieve planned outcomes
- apply techniques for resolving problems and conflicts and dealing with poor performance within organisational and legislative requirements
- review and improve workplace outcomes in consultation with relevant personnel
- adjust interpersonal style and communications to respond to cultural and social diversity
- apply relationship management and communication skills with a range of people that:
  - demonstrate integrity, respect, empathy and cultural sensitivity and promote trust
  - forge effective relationships with internal and/or external people and help to maintain these networks
  - encourage participation and foster contribution of and respect for ideas and feedback
  - provide support to colleagues to resolve difficulties.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- give examples of how work relationships, and the cultural and social environment, can support or hinder achieving planned outcomes
- explain techniques for developing positive work relationships and building trust and confidence in a team including interpersonal styles, communications, consultation, cultural and social sensitivity, networking
- explain the impact of legislation and organisational policies on workplace relationships
- describe a range of methods and techniques for communicating information and ideas to a range of stakeholders
- outline problems solving methods

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- explain methods to resolve workplace conflict
- explain methods to manage poor work performance
- explain how to monitor, analyse and introduce ways to improve work relationships.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the management and leadership field of work and include access to:

- relevant legislation, regulations, standards and codes
- relevant workplace documentation and resources
- case studies and, where possible, real situations
- interaction with others.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBLDR803 Develop and cultivate collaborative partnerships and relationships

Modification History

Release	Comments
Release 2	This version first released with BSB Business Services Training Package Version 1.1. Version created to correct mapping table information
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to establish collaborative partnerships and relationships with business and industry stakeholders.

This unit covers communicating to influence others, cultivating new and existing partnerships, establishing positive collaborative relationships, leading the establishment of a partnership program and establishing reporting mechanisms.

It applies to people who use cognitive and creative skills to review, critically analyse, consolidate and synthesise knowledge, in order to generate ideas and provide solutions to complex problems. They use communication skills to demonstrate their understanding of theoretical concepts and to transfer knowledge and ideas to others.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Management and Leadership - Leadership

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA

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ELEMENT	**PERFORMANCE CRITERIA**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Communicate to influence relevant individuals and stakeholders	1.1 Generate trust, confidence and support from relevant stakeholders by demonstrating a high standard of personal performance and conduct 1.2 Implement communication strategies to represent the organisation positively to media, local community and stakeholders 1.3 Make decisions in consultation with relevant stakeholders and relevant individuals where appropriate 1.4 Use a range of influencing strategies to increase commitment from staff and stakeholders to achieve organisational requirements and to contribute to desired culture 1.5 Undertake selected community and/or professional engagements that project a positive image of the organisation to the broader community and stakeholders
2. Cultivate new and existing partnerships with stakeholders	2.1 Establish outcomes to be achieved from the partnership 2.2 Analyse and apply models for effective consultation and collaboration within partnerships 2.3 Cultivate collaborative communities and partnerships through application of a range of communication solutions 2.4 Forge relationships, collaborative communities or partnerships between organisations
3. Establish positive collaborative relationships	3.1 Establish processes that contribute to the creation and maintenance of a positive culture that embraces collaboration 3.2 Establish processes to resolve conflict in a fair, equitable and collaborative manner 3.3 Organise and allocate work activities in a cost effective and equitable manner with clear, quantifiable and agreed performance standards 3.4 Encourage staff to undertake activities that develop their personal competence and performance 3.5 Empower individuals to develop their own ways of working within agreed boundaries of competence, cultural, diversity and organisational and legal requirements 3.6 Establish indicators and feedback processes that can be used to evaluate the health of the work environment
4. Lead establishment of a	4.1 Identify and address relevant organisational policies and

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ELEMENT	PERFORMANCE CRITERIA
partnership program	procedures in partnership plans 4.2 Identify and incorporate relevant legal requirements into planning 4.3 Form partnerships using collaborative and consultative processes involving public and/or private sector enterprises 4.4 Plan and allocate resource requirements to accomplish a partnership program 4.5 Establish relevant organisational policies and procedures relating to partnerships
5. Establish reporting mechanisms for partnership program	5.1 Establish reporting systems for reporting results against planned partnership outcomes 5.2 Implement reporting systems to map progress against partnership outcomes

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	2.2	• Sources, evaluates and critiques ideas and information from a range of complex texts
Writing	2.1, 3.1, 3.2, 3.6, 4.4, 4.5, 5.1	• Develops texts dealing with complex concepts using specialised and detailed language to convey strategy context and intent and requirements in accordance organisational requirements
Oral Communication	2.3, 3.4, 4.3	• Leads discussions using language and non-verbal features to suit the audience • Uses active listening and questioning to seek the views and opinions of others
Numeracy	3.3	• Selects and uses familiar mathematical techniques to determine costs and benefits associated with strategic resource decisions
Navigate the world of work	3.5, 4.1, 4.2	• Takes a lead role in the development of organisational goals, roles and responsibilities • Leads adherence to organisational policies, procedures and legal requirements and considers own role in terms

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		of its contribution to broader goals of the organisation
Interact with others	1.1, 1.4, 2.3, 2.4, 3.2, 3.4, 4.3	• Plays a lead role in building effective collaboration and trust, demonstrating high level conflict resolution skills and ability to engage and motivate others • Identifies and uses a variety of appropriate conventions and protocols when communicating with colleagues and external stakeholders
Get the work done	1.2, 1.3, 1.5, 2.1, 3.1, 3.3, 3.6, 4.4, 5.2	• Develops flexible plans for complex, high impact activities with strategic implications that involve a diverse range of stakeholders with potentially competing demands • Monitors agreed outcomes and required indicators

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBLDR803 Develop and cultivate collaborative partnerships and relationships	BSBREL701A Develop and cultivate collaborative partnerships and relationships	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBLDR803 Develop and cultivate collaborative partnerships and relationships

Modification History

Release	Comments
Release 2	This version first released with BSB Business Services Training Package Version 1.1. Version created to correct mapping table information
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- demonstrate and model skills and knowledge to foster partnerships, conduct stakeholder consultation and use strategic and personally enhancing communication skills
- develop collaborative approaches to enhance individual, team and organisational outcomes
- initiate and implement partnerships in line with relevant regulatory, employment and organisational requirements.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline the legislative and regulatory context of the organisation
- outline the organisation's mission, purpose, values, objectives and strategies
- explain techniques that cultivate collaborative relationships and partnerships
- describe data collection methods
- explain the external context including social, political, economic and technological developments
- explain emotional intelligence and its relationship to individual and team effectiveness
- explain organisational transformation and the management of the stages of change.

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Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the management and leadership field of work and include access to:

- relevant legislation, regulations, standards and codes
- workplace documents including business strategic plans, policies and procedures
- case studies and, where possible, real situations
- interaction with others.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBMGT401 Show leadership in the workplace

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to lead teams and individuals by modelling high standards of conduct to reflect the organisation's standards and values.

It applies to individuals who are making the transition from being a team member to taking responsibility for the work and performance of others and providing the first level of leadership within the organisation. These managers have a strong influence on the work culture, values and ethics of the teams they supervise.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Management and Leadership – Management

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Model high standards of management performance and behaviour	1.1 Ensure management performance and behaviour meets the organisation’s requirements 1.2 Ensure management performance and behaviour serves as a positive role model for others 1.3 Develop and implement performance plans in accordance with organisation’s goals and objectives 1.4 Establish and use key performance indicators to meet

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ELEMENT	PERFORMANCE CRITERIA
	organisation's goals and objectives
2. Enhance organisation's image	2.1 Use organisation's standards and values in conducting business 2.2 Question, through established communication channels, standards and values considered to be damaging to the organisation 2.3 Ensure personal performance contributes to developing an organisation which has integrity and credibility
3. Make informed decisions	3.1 Gather and organise information relevant to the issue/s under consideration 3.2 Facilitate individual's and team's active participation in decision-making processes 3.3 Examine options and assess associated risks to determine preferred course/s of action 3.4 Ensure decisions are timely and communicate them clearly to individuals and teams 3.5 Prepare plans to implement decisions and ensure they are agreed by relevant individuals and teams 3.6 Use feedback processes effectively to monitor the implementation and impact of decisions

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.3, 1.4, 2.1, 3.1, 3.3, 3.5, 3.6	• Gathers, interprets and analyses text relating to organisational goals, standards and values to aid planning and decision making
Writing	1.3, 1.4, 3.1, 3.3, 3.5, 3.6	• Records and reports key information related to the organisational goals, standards and objectives • Researches, plans and prepares documentation for relevant stakeholders
Oral Communication	1.2, 1.3, 2.2, 2.3, 3.2, 3.4, 3.5, 3.6	• Uses appropriate structure and language when developing performance plans, or when seeking and providing information about organisational goals and

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		objectives
Numeracy	1.4	• Identifies and comprehends mathematical information in familiar texts to establish key performance indicators
Navigate the world of work	1.1, 1.2, 1.3, 1.4, 2.1, 2.3	• Understands how own role meshes with others and contributes to broader work goals • Monitors adherence to organisational policies and procedures and considers own role in terms of its contribution to broader goals of the work environment
Interact with others	1.2, 1.3, 2.2, 2.3, 3.2, 3.4, 3.5, 3.6	• Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective outcomes • Recognises the importance of taking audience, purpose and contextual factors into account when making decisions about what to communicate with whom, why and how
Get the work done	1.1, 1.3, 1.4, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6	• Develops plans to manage relatively complex, non-routine tasks with an awareness of how they contribute to longer term operational and strategic goals • Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information and identifying and evaluating options against agreed criteria • Evaluates effectiveness of decisions in terms of how well they meet stated goals

Range of Conditions

This section specifies different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Organisation's standards and values must be identified by considering:	• explicitly stated values • values that are implied by the way the organisation conducts its business.

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**

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Code and title current version	Code and title previous version	Comments	Equivalence status
BSBMGT401 Show leadership in the workplace	BSBMGT401A Show leadership in the workplace	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBMGT401 Show leadership in the workplace

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- identify the organisation's standards and values, whether stated or implied by the way the organisation conducts its business
- evaluate own behaviour and performance against these and adjust to achieve required standards
- develop and implement performance plans and key performance indicators (KPIs) to meet organisation's goals and objectives
- use established communication channels to raise questions about standards and values that may be damaging to the organisation
- ensure own behaviour and performance contributes to the integrity and credibility of the organisation
- facilitate processes to make decisions that are based on:
  - relevant information
  - examination of options and associated risks
  - input from relevant people
- communicate about making and implementing decisions including:
  - facilitating agreement on the preferred course of action and implementation plans
  - monitoring and feedback on the implementation and impact of decisions.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain how to identify an organisation's standards and values when they are:
  - stated

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  - implied
- articulate organisational values and expectations of behaviour
- explain basic theory of group behaviour
- outline the organisation's process for raising questions about standards and values
- give examples of behaviours and performance that would typically be considered damaging to an organisation
- explain concepts including:
  - organisational values
  - role modelling
  - integrity and credibility
  - leadership.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the management and leadership field of work and include access to:

- relevant workplace documentation and resources
- case studies and, where possible, real situations
- interaction with others.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBMGT608 Manage innovation and continuous improvement

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to sustain and develop an environment in which continuous improvement, innovation and learning are promoted and rewarded.

It applies to people with managerial responsibilities who aim to build a better and more effective work environment. Continuous improvement and innovation have links with the model of the learning organisation and people working at this level play an important role in building the culture, values and attitudes of the organisation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Management and Leadership – Management

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Review programs, systems and processes	1.1 Establish strategies to monitor and evaluate performance and sustainability of key systems and processes 1.2 Undertake detailed analyses of supply chains, and operational, product and service delivery systems 1.3 Identify performance measures, and assessment tools and techniques, and evaluate their effectiveness 1.4 Analyse performance reports and variance from plans for key

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ELEMENT	PERFORMANCE CRITERIA
	result areas of the organisation 1.5 Identify and analyse changing trends and opportunities relevant to the organisation 1.6 Seek advice from specialists, where appropriate, to identify technology and electronic commerce opportunities
2. Develop options for continuous improvement	2.1 Brief groups on performance improvement strategies and innovation as an essential element of competition 2.2 Foster creative climate and organisational learning by promoting interaction within and between work groups 2.3 Encourage, test and recognise new ideas and entrepreneurial behaviour where successful 2.4 Accept failure of an idea during trialling and recognise, celebrate and embed success into systems 2.5 Undertake risk management and cost-benefit analysis for each option or idea approved for trial 2.6 Approve innovations through agreed organisational processes
3. Implement innovative processes	3.1 Promote continuous improvement and sustainability as essential to doing business 3.2 Address the impact of change and consequences for people and implement transition plans 3.3 Ensure objectives, timeframes, measures and communication plans are in place to manage implementation 3.4 Implement contingency plans in the event of non-performance 3.5 Follow up failure by prompt investigation and analysis of causes and manage emerging challenges and opportunities effectively 3.6 Ensure that learnings from activities are captured and managed to inform future work 3.7 Regularly evaluate continuous improvement systems and processes 3.8 Communicate costs and benefits of innovations and improvements to relevant groups and individuals

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Learning	3.6	• Plans and implements strategies to review and improve own performance
Reading	1.1-1.5, 2.5, 2.6, 3.2-3.5, 3.7	• Analyses, evaluates and integrates facts and ideas to construct meaning from a range of text types
Writing	1.1-1.5, 2.1, 2.5, 3.2, 3.3, 3.5, 3.6, 3.7, 3.8	• Integrates information and ideas from a range of sources, utilising appropriate support materials • Communicates complex relationships between ideas and information, matching style of writing to purpose and audience
Oral Communication	1.6, 2.1-2.4, 3.1, 3.5, 3.8	• Participates in a variety of spoken exchanges with co-workers and stakeholders when developing options and implementing the continuous improvement plan
Numeracy	1.1-1.5, 2.5, 3.3	• Selects and interprets mathematical information to analyse performance • Performs calculations required to establish timeframes, cost-benefits and measures for continuous improvement and innovation processes
Navigate the world of work	2.6	• Adheres to organisational policies and procedures and considers own role in terms of its contribution to broader goals of the work environment
Interact with others	1.6, 2.1-2.4, 3.1, 3.5, 3.8	• Recognises the importance of taking audience, purpose and contextual factors into account when making decisions about what to communicate, with whom, why and how • Recognises the importance of building rapport to establish positive and effective working relationships • Collaborates with others to achieve joint outcomes, playing an active role in encouraging innovation and facilitating effective group interaction
Get the work done	1.1, 1.2, 1.3, 1.5, 1.6, 2.3, 2.4, 2.5, 3.1, 3.2, 3.3, 3.4, 3.5, 3.7	• Plans, organises, implements or reviews organisational strategies, systems and processes • Applies problem-solving processes to identify risks, evaluate options and determine solutions • Uses lateral and analytical thinking to evaluate options against needs, resources and constraints before making decisions • Facilitates a climate in which creativity and innovation

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		are accepted as an integral part of achieving outcomes • Recognises that the current way is only one way of doing something and explores possibilities that challenge current approaches • Actively identifies systems, devices and applications with potential to meet current and or future needs, with the help of specialists

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBMGT608 Manage innovation and continuous improvement	BSBMGT608C Manage innovation and continuous improvement	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBMGT608 Manage innovation and continuous improvement

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- analyse and evaluate systems and performance in key areas of the organisation and identify opportunities for improvement, seeking advice from experts as appropriate
- promote the value of creativity, innovation and sustainability and recognise successes
- support the testing and trialling of new ideas and undertake risk management and cost-benefit analysis for options
- plan for and implement improvements using organisation's processes for approvals, project management and change management
- facilitate effective contributions to and communications about continuous improvement and innovation
- capture insights, experiences and ideas for improvements and incorporate them into the organisation's knowledge management systems and future planning.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline cost-benefit analysis methods
- describe creativity and innovation theories and concepts
- list organisational learning principles
- identify quality management and continuous improvement theories
- describe relevant risk management concepts
- outline relevant sustainability practices.

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Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the management and leadership field of work and include access to:

- relevant workplace documentation and resources
- case studies and, where possible, real situations
- interaction with others.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBPMG517 Manage project risk

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to manage risks that may impact achievement of project objectives. It involves identifying, analysing, treating and monitoring project risks, and assessing risk management outcomes.

It applies to individuals responsible for managing and leading a project in an organisation, business, or as a consultant.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Management and Leadership – Project Management

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify project risks	1.1 Determine risk objectives and standards, with input from stakeholders 1.2 Establish project risk context to inform risk management processes 1.3 Identify project risks using valid and reliable risk identification methods 1.4. Classify project risks within agreed risk categories

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ELEMENT	PERFORMANCE CRITERIA
2. Analyse project risks	2.1 Determine risk analysis classification criteria and apply to agreed risk ranking system 2.2 Use risk analysis processes, within delegated authority, to analyse and qualify risks, threats and opportunities 2.3 Determine risk priorities in agreement with project client and other stakeholders 2.4 Document risk analysis outcomes for inclusion in risk register and risk management plan
3. Establish risk treatments and controls	3.1 Identify and document existing risk controls 3.2 Consider and determine risk treatment options using agreed consultative methods 3.3 Record and implement agreed risk treatments 3.4 Update risk plans and allocate risk responsibilities to project team members
4. Monitor and control project risks	4.1 Establish regular risk review processes to maintain currency of risk plans 4.2 Regularly monitor risk environment to identify changed circumstances impacting project risks 4.3 Determine risk responses to changed environment 4.4 Implement agreed risk responses and modify plans to maintain currency of risk treatments and controls
5. Assess risk management outcomes	5.1 Review project outcomes to determine effectiveness of risk-management processes and procedures 5.2 Identify and document risk management issues and recommended improvements for application to future projects

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.4, 2.1, 2.2, 3.1, 3.2, 4.2, 5.1, 5.2	• Interprets and critically analyses complex texts from a range of sources and determines how content may be applied according to organisational requirements

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Writing	1.3, 1.4, 2.1, 2.4, 3.1, 3.3, 3.4, 4.1, 4.3, 4.4, 5.2	• Documents risks, risk analysis and risk controls using required formats and structure • Modifies and updates workplace documentation according to requirements
Oral Communication	1.1, 2.3, 3.4	• Participates in verbal exchanges using clear language to provide and seek information • Uses active listening and questioning techniques to confirm understanding
Numeracy	1.3, 2.1, 2.3	• Analyses numerical data to identify project risk levels and rank risks according to agreed system of classification
Navigate the world of work	1.1, 2.2	• Determines and adheres to organisational policies and standards • Considers own role in terms of its contribution to broader goals of work environment
Interact with others	1.1, 2.3, 3.4	• Selects and uses appropriate conventions and protocols when communicating with internal and external stakeholders to seek or share information • Actively identifies requirements of important communication exchanges, selecting appropriate channels, format and content to suit purpose and audience
Get the work done	1.1-1.4, 2.1, 3.2, 4.1, 4.4, 5.1	• Identifies and develops approaches to risk management and implements complex tasks to achieve outcomes • Analyses information to make decisions, involving others when appropriate • Uses formal and informal processes to monitor implementation of decisions and reflect on outcomes

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBPMG517 Manage project risk	BSBPMG517A Manage project risk	Updated to meet Standards for Training Packages	Equivalent unit

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBPMG517 Manage project risk

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- conduct effective risk management for a project of sufficient complexity to demonstrate the full range of performance requirements
- apply risk management techniques, strategies and tools.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify project risks in a range of risk categories
- explain key components of a risk management plan
- outline industry sector risk classifications and relate these to different risk contexts
- summarise organisational and industry standard risk frameworks
- identify and describe characteristics, techniques and appropriate applications of quantitative and qualitative risk management techniques and approaches.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the management and leadership – project management field of work and include access to:

- workplace risk management documentation
- feedback from project stakeholders about how risks were managed.

Assessors must satisfy NVR/AQTF assessor requirements.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBPMG521 Manage project integration

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to integrate and balance overall project management functions of scope, time, cost, quality, human resources, communications, risk and procurement across the project life cycle; and to align and track project objectives to comply with organisational goals, strategies and objectives.

It applies to individuals responsible for managing and leading a project in an organisation, business, or as a consultant.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Management and Leadership – Project Management

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish project	1.1 Identify, clarify and prepare project initiation documentation 1.2 Identify relationship between the project and broader organisational strategies and goals 1.3 Negotiate and document project objectives, outcomes and benefits 1.4 Negotiate project governance structure with relevant

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ELEMENT	PERFORMANCE CRITERIA
	authorities and stakeholders 1.5 Prepare and submit project charter for approval by relevant authorities
2. Undertake project planning and design processes	2.1 Establish and implement a methodology to disaggregate project objectives into achievable project deliverables 2.2 Identify project stages and key requirements for stage completion against client requirements and project objectives 2.3 Analyse project management functions to identify interdependencies and impacts of constraints 2.4 Develop a project management plan that integrates all project-management functions with associated plans and baselines 2.5 Establish designated mechanisms to monitor and control planned activity 2.6 Negotiate approval of project plan with relevant stakeholders and project authority
3. Execute project in work environment	3.1 Manage the project in an established internal work environment to ensure work is conducted effectively throughout the project 3.2 Maintain established links to align project objectives with organisational objectives throughout the project 3.3 Within authority levels, resolve conflicts negatively affecting attainment of project objectives
4. Manage project control	4.1 Ensure project records are updated against project deliverables and plans at required intervals 4.2 Analyse and submit status reports on project progress and identified issues with stakeholders and relevant authorities 4.3 Analyse and submit impact analysis of change requests for approval, where required 4.4 Maintain relevant project logs and registers accurately and regularly to assist with project audit 4.5 Ensure associated plans are updated to reflect project progress against baselines and approved changes
5. Manage project finalisation	5.1 Identify and allocate project finalisation activities 5.2 Ensure project products and associated documentation are prepared for handover to client in a timely manner 5.3 Finalise financial, legal and contractual obligations

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ELEMENT	PERFORMANCE CRITERIA
	5.4 Undertake project review assessments as input to future projects

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 2.4, 4.1, 4.2, 4.3	• Applies appropriate strategies to construct meaning from complex texts
Writing	1.1, 1.3, 1.5, 2.2, 2.4, 4.1, 4.4, 4.5	• Develops and maintains project documentation using formats and language appropriate to context
Oral Communication	1.3, 1.4, 2.6	• Participates in verbal exchanges using clear and detailed language to provide and seek information • Uses active listening and questioning to confirm understanding
Numeracy	1.1, 2.1-2.4, 4.2, 4.3, 5.3	• Uses a wide range of mainly formal and some informal, oral and written mathematical language and representation to communicate mathematically
Navigate the world of work	1.2, 1.5, 5.3	• Adheres to organisational and legislative requirements
Interact with others	1.3,1.4, 2.6, 3.3	• Selects and uses appropriate communication practices to seek or share information with stakeholders • Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective group interaction and negotiating outcomes
Get the work done	1.1, 1.2, 1.5, 2.1-2.5, 3.1, 3.2, 4.1-4.5, 5.1-5.4	• Organises time and effort around priorities and results, focusing beyond immediate tasks to consider work performance of the group • Sequences and schedules complex activities, monitors implementation and manages relevant communication • Reflects on outcomes to contribute to future projects

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
BSBPMG521 Manage project integration	BSBPMG521A Manage project integration	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBPMG521 Manage project integration

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- work closely with others to integrate all project management functions across a project life cycle according to organisational objectives
- negotiate with internal and external stakeholders
- create accurate project management documentation
- make suggestions for improvements to managing project integration in the future.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- summarise project governance models
- describe range of methodologies to break project objectives into achievable project deliverables
- outline role of project life cycle stages, phases and structures relevant to industry and project context
- identify and describe appropriate organisational documentation for recording strategies and goals for integration processes.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the management and leadership – project management field of work and include access to:

- project documentation
- case studies and, where possible, real situations

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- interaction with others.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBPMG522 Undertake project work

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to undertake a straightforward project or a section of a larger project. It covers developing a project plan, administering and monitoring the project, finalising the project and reviewing the project to identify lessons learned for application to future projects.

This unit applies to individuals who play a significant role in ensuring a project meets timelines, quality standards, budgetary limits and other requirements set for the project.

The unit does not apply to specialist project managers. For specialist project managers, the other units of competency in the project management field (BSBPMG) will be applicable.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Management and Leadership – Project Management

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Define project	1.1 Access project scope and other relevant documentation 1.2 Define project stakeholders 1.3 Seek clarification from delegating authority of issues related to

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ELEMENT	PERFORMANCE CRITERIA
	project and project parameters 1.4 Identify limits of own responsibility and reporting requirements 1.5 Clarify relationship of project to other projects and to the organisation's objectives 1.6 Determine and access available resources to undertake project
2. Develop project plan	2.1 Develop project plan in line with the project parameters 2.2 Identify and access appropriate project management tools 2.3 Formulate risk management plan for project, including Work Health and Safety (WHS) 2.4 Develop and approve project budget 2.5 Consult team members and take their views into account in planning the project 2.6 Finalise project plan and gain necessary approvals to commence project according to documented plan
3. Administer and monitor project	3.1 Take action to ensure project team members are clear about their responsibilities and the project requirements 3.2 Provide support for project team members, especially with regard to specific needs, to ensure that the quality of the expected outcomes of the project and documented time lines are met 3.3 Establish and maintain required recordkeeping systems throughout the project 3.4 Implement and monitor plans for managing project finances, resources and quality 3.5 Complete and forward project reports as required to stakeholders 3.6 Undertake risk management as required to ensure project outcomes are met 3.7 Achieve project deliverables
4. Finalise project	4.1 Complete financial recordkeeping associated with project and check for accuracy 4.2 Ensure transition of staff involved in project to new roles or reassignment to previous roles 4.3 Complete project documentation and obtain necessary sign-offs for concluding project
5. Review project	5.1 Review project outcomes and processes against the project scope and plan

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ELEMENT	PERFORMANCE CRITERIA
	5.2 Involve team members in the project review 5.3 Document lessons learned from the project and report within the organisation

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 3.4, 3.5, 4.1, 4.3, 5.1	• Organises, evaluates and critiques ideas and information from a range of complex texts
Writing	2.1, 2.3, 2.6, 3.3, 3.5, 4.1, 4.3, 5.3	• Develops plans, reports and recommendations using vocabulary, structure and conventions appropriate to text • Establishes and maintains records according to organisational requirements
Numeracy	1.6, 2.4, 3.4, 4.1	• Uses formal and some informal, oral and written mathematical language and representation to prepare and communicate budgetary and financial information
Oral communication	2.5, 5.2	• Participates in verbal discussions using clear language and appropriate features to present or seek information • Using listening and questioning skills to seek information and confirm understanding
Navigate the world of work	1.3, 1.4, 2.3, 3.1, 4.3	• Recognises and responds to organisational and legislative/regulatory requirements
Interact with others	2.5, 3.1, 3.2, 4.2, 5.2	• Selects and uses appropriate communication protocols and practices to ensure shared understanding of project roles and expectations • Uses collaborative techniques to engage stakeholders in consultations and negotiations
Get the work done	1.2, 1.5, 1.6, 2.1, 2.2, 2.3, 2.6, 3.1-3.7, 4.1, 4.2, 4.3, 5.1, 5.3	• Develops and implements plans to manage projects that involve diverse stakeholders with potentially competing demands • Systematically gathers and analyses all relevant information and evaluates options to make informed decisions • Evaluates outcomes of decisions to identify

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		opportunities for improvement • Uses digital technologies and applications to access, organise and share information

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBPMG522 Undertake project work	BSBPMG522A Undertake project work	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBPMG522 Undertake project work

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- define the parameters of the project including:
  - project scope
  - project stakeholders, including own responsibilities
  - relationship of project to organisational objectives and other projects
  - reporting requirements
  - resource requirements
- use project management tools to develop and implement a project plan including:
  - deliverables
  - work breakdown
  - budget and allocation of resources
  - timelines
  - risk management
  - recordkeeping and reporting
- consult and communicate with relevant stakeholders to generate input and engagement in planning, implementing and reviewing the project
- provide support to team members to enable them to achieve deliverables and to transition them as appropriate at completion of the project
- finalise the project including documentation, sign-offs and reporting
- review and document the project outcomes.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

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- give examples of project management tools and how they contribute to a project
- outline types of documents and other sources of information commonly used in defining the parameters of a project
- explain processes for identifying and managing risk in a project
- outline the organisation's mission, goals, objectives and operations and how the project relates to them
- explain the organisation's procedures and processes that are relevant to managing a project including:
  - lines of authority and approvals
  - quality assurance
  - human resources
  - budgets and finance
  - recordkeeping
  - reporting
- outline the legislative and regulatory context of the organisation in relation to project work, including work health and safety (WHS) requirements.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the management and leadership – project management field of work and include access to:

- relevant legislation, regulations, standards and codes
- relevant workplace documentation and resources
- case studies and, where possible, real situations
- interaction with others.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBSMB305 Comply with regulatory, taxation and insurance requirements for the micro business

Modification History

Release	Comments
Release 2	This version first released with BSB Business Services Training Package Version 2.0. Version created to clarify intent of unit
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to source advice and specialist services to manage business compliance requirements.

It applies to individuals who are establishing or operating a micro business providing self-employment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Management and Leadership – Small and Micro Business

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify regulatory, taxation and insurance requirements of the business	1.1 Identify regulatory, taxation and insurance requirements that might be relevant to operation of the business 1.2 Gather information that assists in interpreting and explaining regulatory, taxation and insurance requirements

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ELEMENT	PERFORMANCE CRITERIA
	1.3 Investigate relationships between legislation, regulations, codes of practice, associated standards and written material to determine compliance requirements of the business
2. Develop procedures to ensure compliance and risk minimisation	2.1 Identify business advisors and other sources of assistance relevant to compliance requirements and business type 2.2 Explain business type and operations to advisors, covering full scope of the business 2.3 Clarify and confirm compliance requirements and risk minimisation needs with advisors 2.4 Access sources of advice and specialist services for regulatory, taxation and insurance compliance 2.5 Review advice and procedures against compliance requirements and their appropriateness for the business
3. Implement compliance procedures	3.1 Implement procedures within provided guidelines 3.2 Take action to ensure the business complies with relevant taxation and business registration requirements, legislation, regulations, codes of practice and associated standards 3.3 Arrange appropriate insurance cover for the business

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.3, 2.1, 2.4, 2.5, 3.1-3.3	• Identifies and interprets legislative and regulatory information pertinent to business requirements
Writing	1.1, 2.1, 3.2, 3.3	• Develops material for a specific audience using clear and detailed language to clarify information and requirements
Oral Communication	2.2, 2.3, 3.3	• Articulates clearly using specific and relevant language suitable to audience to convey requirements, and listening and questioning techniques to confirm understanding
Numeracy	2.5, 3.3	• Analyses numerical information to calculate specific business requirements

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		• Uses formal and informal mathematical language to discuss compliance
Navigate the world of work	1.1, 1.3, 3.1, 3.2	• Takes some personal responsibility for adherence to legal and regulatory requirements
Get the work done	1.2, 1.3, 2.1, 2.4, 3.3	• Plans routine tasks with familiar goals and outcomes, taking some limited responsibility for decisions regarding sequencing and timing • Understands and explicitly applies some basic principles of analytical and lateral thinking • Takes responsibility for the outcomes of routine decisions related directly to own role • Determines priorities and sequences steps involved in clearly defined familiar tasks, and identifies and assembles resources required

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBSMB305 Comply with regulatory, taxation and insurance requirements for the micro business Release 2	BSBSMB305 Comply with regulatory, taxation and insurance requirements for the micro business Release 1	Minor edits to clarify intent	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBSMB305 Comply with regulatory, taxation and insurance requirements for the micro business

Modification History

Release	Comments
Release 2	This version released with BSB Business Services Training Package Version 2.0. Version created to clarify intent of unit
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- identify regulatory, taxation and insurance compliance requirements, and risk minimisation needs of the business
- identify, select and access sources of advice on compliance and risk minimisation procedures for the business
- complete a development and review of procedures for compliance and risk minimisation (with assistance from advisors).

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify micro business registration and licensing requirements
- list government legislative requirements relating to business operation
- categorise the nature of legal responsibility
- pinpoint relevant industry codes of practice
- list relevant WHS responsibilities and procedures
- name sources of advice and specialist services
- identify sources of information about regulatory, taxation and insurance requirements and issues
- outline taxation requirements.

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Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the Management and Leadership – Small and Micro Business field of work and include access to:

- business technology including internet access for research
- relevant legislation, regulations, standards and codes
- relevant workplace documentation and resources
- case studies or where possible, real situations
- interaction with others.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBSMB306 Plan a home based business

Modification History

Release	Comments
Release 2	This version released with BSB Business Services Training Package Version 2.0. Version created to clarify intent of unit
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to assess the viability and create a plan to operate a business in the home environment.

It applies to individuals who are establishing or operating a micro business providing self-employment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Management and Leadership – Small and Micro Business

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine viability of basing a business in a home environment	1.1 Identify activities that will be undertaken by the business and what facilities and workspace are needed 1.2 Identify what licences, permits, regulations or restrictions apply to operating a home based business

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ELEMENT	PERFORMANCE CRITERIA
	1.3 Identify availability of services and infrastructure to support the business 1.4 Calculate costs of suitable fittings and equipment for the business and any modifications required to existing facilities and infrastructure in the home 1.5 Determine access requirements of clients or delivery vehicles to the business premises 1.6 Identify insurance requirements for operation of the business in the home
2. Plan workplace in a home environment	2.1 Prepare a floor plan or layout that meets needs of the business and home occupants 2.2 Prepare any concept plans for modifications to buildings or structures in accordance with local government requirements 2.3 Obtain approvals from relevant authorities 2.4 Identify work health and safety (WHS) issues and develop procedures to eliminate or minimise any risks 2.5 Design workplace to provide appropriate client access and facilities while retaining privacy for home occupants 2.6 Allocate adequate and secure space for business machinery, equipment and storage of materials
3. Minimise potential sources of conflict	3.1 Identify possible sources of conflict with neighbours or home occupants 3.2 Develop protocols for home occupants, visitors and clients to enable the business to successfully operate in the home environment 3.3 Prepare a work schedule that identifies business and personal activities 3.4 Establish contingency plans for unanticipated events

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description

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Reading	1.2, 1.3, 1.6, 2.2, 2.4	• Interprets all legislative and regulatory information pertinent to business requirements
Writing	1.6, 2.1, 2.3, 2.4, 3.2-3.4	• Uses factual information to complete required forms and workplace documentation
Oral Communication	1.6, 2.3	• Articulates clearly using specific and relevant language suitable to audience to convey requirements, and listening and questioning techniques to confirm understanding
Numeracy	1.4	• Analyses numerical information to calculate equipment and infrastructure costs
Navigate the world of work	1.2, 2.2, 2.4, 3.2	• Appreciates implications of legal and regulatory responsibilities related to own work and recognises specific legal principles and protocols applicable across work context
Interact with others	2.3	• Selects appropriate form, channel and mode of communication for a specific purpose relevant to own role
Get the work done	1.1, 1.3-1.6, 2.1, 2.5, 2.6, 3.1, 3.3, 3.4	• Takes responsibility for planning and organising own workload, identifying ways of sequencing work efficiently • Takes responsibility for outcomes of decisions related directly to own role • Recognises and takes responsibility for addressing and rectifying potential problems in the work place

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBSMB306 Plan a home based business Release 2	BSBSMB306 Plan a home based business Release 1	Minor edits to clarify intent	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBSMB306 Plan a home based business

Modification History

Release	Comments
Release 2	This version released with BSB Business Services Training Package Version 2.0. Version created to clarify intent of unit
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- identify practical requirements of running a home based business, including calculation of costs
- plan suitable workspace, including:
  - preparing concept plan for possible modifications to structure of building
  - obtaining relevant approvals from external sources
  - identifying and meeting required legislative requirements
- implement procedures and protocols to ensure home based business runs smoothly including:
  - creating work schedule
  - identifying and establishing contingency plans for areas of possible conflict.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- list prohibitive factors in setting up a home based business
- list commonwealth, state/territory and local government legislative requirements relating to business operation, especially for work health and safety (WHS) and environmental issues
- outline constraints of home based businesses

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- summarise relevant services and available infrastructure.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the Management and Leadership – Small and Micro Business field of work and include access to:

- relevant legislation, regulations, standards and codes
- relevant workplace documentation and resources
- case studies or where possible, real situations.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBSMB401 Establish legal and risk management requirements of small business

Modification History

Release	Comments
Release 2	This version released with BSB Business Services Training Package Version 2.0. Version created to clarify intent of unit
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to identify and comply with all regulations affecting the business.

It applies to individuals operating a small business who use analytical skills to interpret legislation and regulations and develop procedures to manage compliance.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Management and Leadership – Small and Micro Business

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and implement business legal requirements	1.1 Identify and research possible options for the business legal structure using appropriate sources 1.2 Determine legislation and regulatory requirements affecting

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ELEMENT	PERFORMANCE CRITERIA
	operations of the business under its chosen structure 1.3 Develop and implement procedures to ensure full compliance with relevant legislation and regulatory requirements
2. Comply with legislation, codes and regulatory requirements	2.1 Establish systems to ensure legal rights and responsibilities of the business are identified and the business is adequately protected, specifically in relation to work health and safety (WHS), business registration and environmental requirements 2.2 Identify taxation principles and requirements relevant to the business, and follow procedures to ensure compliance 2.3 Identify and carefully maintain legal documents and maintain and update relevant records to ensure their ongoing security and accessibility 2.4 Monitor provision of products and services of the business to protect legal rights and to comply with legal responsibilities 2.5 Conduct investigations to identify areas of non-compliance with legal and regulatory requirements, and take corrective action where necessary
3. Negotiate and arrange contracts	3.1 Seek legal advice on contractual rights and obligations, if required, to clarify business liabilities 3.2 Investigate and assess potential products and services to determine procurement rights and ensure protection of business interests where applicable 3.3 Negotiate and secure contractual procurement rights for goods and services including contracts with relevant people, as required, in accordance with the business plan 3.4 Identify options for leasing or ownership of business premises and complete contractual arrangements in accordance with the business plan
4. Identify and treat business risks	4.1 identify potential internal and external risks to the business 4.2 assess the probability and impact of identified risks 4.3 prioritise risks for treatment 4.4 develop actions to mitigate risks including identifying insurance requirements and adequate cover

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Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.3, 2.1-2.4, 3.2-3.5	• Identifies, analyses and evaluates a range of complex text to determine legislative, regulatory and related business requirements
Writing	1.3, 2.1, 2.3, 2.5, 3.1, 3.3, 3.5	• Prepares written reports and workplace documentation that communicate complex information clearly and effectively
Oral Communication	2.5, 3.1, 3.3	• Uses specific and relevant language to clearly articulate legal issues, and uses questioning and listening techniques to clarify solutions • Participates in verbal negotiations using tone and language suitable to audience
Numeracy	2.2, 2.5, 3.3, 3.4	• Reviews, analyses, compares and contrasts numerical data which may be embedded in documents • Calculates business insurance costs and compares costing options
Navigate the world of work	1.2, 1.3, 2.1	• Monitors adherence to organisational policies and legislative responsibilities and considers own role in terms of its contribution to broader goals of work environment
Interact with others	3.1, 3.3	• Plays a lead role in situations requiring effective collaboration, demonstrating high-level influencing skills, focusing and shaping awareness, and engaging and motivating others
Get the work done	1.1-1.3, 2.1	• Takes responsibility for planning and organising own workload, identifying ways of sequencing and combining elements for greater efficiency • Implements actions as per plan, making adjustments if necessary and addressing unexpected issues • Understands importance of secure information and privacy in relation to own work and takes personal responsibility for identifying and managing risk factors • Makes a range of critical and non-critical decisions in complex situations, taking a range of constraints into account

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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
BSBSMB401 Establish legal and risk management requirements of small business Release 2	BSBSMB401 Establish legal and risk management requirements of small business Release 1	Minor edits to clarify intent of unit	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBSMB401 Establish legal and risk management requirements of small business

Modification History

Release	Comments
Release 2	This version released with BSB Business Services Training Package Version 2.0. Version created to clarify intent of unit
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- demonstrate a systematic approach to identifying, managing and meeting legal and regulatory requirements, specifically in regard to WHS, business registration and environmental requirements
- ensure compliance, by:
  - following taxation and industrial relations principles
  - updating and maintaining legal documents
  - investigating areas of non-compliance
  - monitoring provision of products and services
  - taking corrective action where necessary
- negotiate and arrange contracts, including:
  - seeking legal advice
  - investigating procurement rights
  - identifying options of leasing or ownership of business premises.
- Identify, assess and treat risks specific to the business including
  - prioritising risks with highest probability of occurrence and greatest negative impact on the business
  - identifying insurance requirements

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

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Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline business registration and licensing requirements
- identify all government legislative requirements relating to the specific business operation
- explain creation and termination of relevant legal contracts
- summarise relevant cultural differences and legal implications
- describe legal rights and obligations of alternative ownership structures
- outline necessary record keeping to meet minimum legal and taxation requirements
- summarise relevant consumer legislation and industry codes of practice
- outline the key steps in the risk management process
- explain relevant insurance requirements and products.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the Management and Leadership – Small and Micro Business field of work and include access to:

- office equipment and resources
- business technology including internet access
- specialist software for analysis of data
- relevant legislation, regulations, standards and codes
- relevant workplace documentation and resources
- case studies, or where possible, real situations
- interaction with others.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBSMB407 Manage a small team

Modification History

Release	Comments
Release 2	This version released with BSB Business Services Training Package Version 2.0. Version created to clarify intent of unit
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to select, induct, train and develop staff members to enhance business operations within the parameters of all relevant legislative requirements.

It applies to individuals who operate a small business that stands alone, or is part of a department within a larger organisation. Individuals in this role have a good knowledge of industrial relations and team management and use effective, responsive and supportive communication in workplace interactions.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Management and Leadership – Small and Micro Business

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Develop staffing plan	1.1 Determine staffing requirements to allow the business to run effectively, in accordance with requirements outlined in the

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ELEMENT	PERFORMANCE CRITERIA
	business plan 1.2 Identify and compare existing skills of owner/s and staff with business requirements to identify any gaps 1.3 Develop policies and procedures for owner/s and staff, in accordance with the business plan
2. Recruit, induct, train and retain team	2.1 Develop job or position descriptions, competencies required and selection criteria to meet business' needs 2.2 Judge information obtained from each candidate against specified selection criteria, and select according to business needs and legal requirements 2.3 Induct new staff members in accordance with policies and procedures of the business 2.4 Make team members aware of their responsibilities and performance requirements as soon as practicable, and take opportunities to coach team members who are unfamiliar with procedures of the business 2.5 Develop and implement a staff development program and career paths based on requirements of business and staff competencies 2.6 Advertise staff vacancies appropriately in accordance with staffing plan
3. Comply with industrial relations obligations	3.1 Clarify workplace rights and obligations of employers and employees, in accordance with legal requirements and codes of practice 3.2 Counsel staff, if required, in a positive and constructive manner and record outcomes accurately
4. Maintain staff records	4.1 Develop staff records system to provide timely and accurate information, in accordance with confidentiality, legal and taxation requirements 4.2 Monitor and accurately maintain system for recording and retrieving personnel and payroll information, and seek specialist advice where required
5. Manage staff	5.1 Regularly review contribution and skills of self and other team members to ensure performance is in line with agreed performance measures 5.2 Monitor and adjust staffing requirements to respond to any changes in tasks and functions required by the business 5.3 Support and encourage staff, and acknowledge and reward

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ELEMENT	PERFORMANCE CRITERIA
	their contribution 5.4 Regularly provide opportunities for staff to discuss work related issues 5.5 Develop contingency plans to cope with unexpected or extreme situations and take appropriate corrective action as required
6. Review team performance	6.1 Develop positive and constructive relationships with and between team members 6.2 Review and update team objectives in support of business goals on a regular basis in consultation with team members 6.3 Identify strengths and weaknesses of team against current and expected work requirements 6.4 Schedule time, on a regular basis, for team members to review work operations to maintain and improve operational efficiency 6.5 Encourage team members to monitor their own performance, suggest improvements and identify professional development needs, in accordance with personal and business requirements 6.6 Monitor and review staff turnover rate

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.3, 2.2, 2.3, 2.5, 2.6, 3.1, 4.1, 5.1, 6.3, 6.5, 6.6	• Evaluates complex text to determine legislative, regulatory and workplace documentation
Writing	1.3, 2.1-2.6, 3.1, 3.2, 4.1, 4.2, 5.5, 6.1-6.3, 6.5	• Prepares written reports and workplace documentation that communicate complex information clearly and effectively
Oral Communication	1.2, 2.2-2.4, 3.1, 3.2, 4.2, 5.3, 5.4, 6.1, 6.2, 6.4, 6.5	• Articulates clearly using specific and relevant language suitable to audience to convey requirements, and employs listening and questioning techniques to confirm understanding • Participates in verbal negotiations and coaching using tone and language suitable to audience

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Numeracy	6.4	• Uses basic mathematical formulas to review staff performances within available work schedules
Navigate the world of work	1.3, 2.2. 3.1, 4.1	• Understands own legal rights and responsibilities and is extending understanding of general legal principles across work contexts • Monitors adherence to organisational policies and procedures and considers own role for its contribution to broader goals of the work environment
Interact with others	2.4, 2.6, 5.3, 6.1, 6.5	• Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective group interaction, influencing direction and taking a leadership role on occasion • Looks for ways of establishing connections and building genuine understanding with a diverse range of people • Actively identifies important communication exchanges, selecting appropriate channels, format, tone and context to suit purpose and audience, and monitors impact
Get the work done	1.1, 1.2, 2.2, 2.3, 2.5, 4.2, 5.1, 5.2, 5.5, 6.3, 6.6	• Uses digital technologies and systems safely, legally and ethically when gathering, storing, accessing and sharing information • Develops plans to manage relatively complex, non-routine tasks with an awareness of how they may contribute to longer-term operational and strategic goals • Makes a range of critical and non-critical decisions in relatively complex situations, taking a range of constraints into account • Uses formal and informal processes to monitor implementation of ideas and reflect on outcomes • Recognises and anticipates an increasing range of familiar problems, their symptoms and causes, actively looking for early warning signs and implementing contingency plans

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBSMB407 Manage a small team Release 2	BSBSMB407 Manage a small	Updated to clarify intent	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
	team Release 1		

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBSMB407 Manage a small team

Modification History

Release	Comments
Release 2	This version released with BSB Business Services Training Package Version 2.0. Version created to clarify intent of unit
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- use the business plan to:
  - determine staffing requirements
  - coordinate skill-gap training where required
  - develop human resource policies and procedures
- develop job descriptions and selection criteria
- determine induction processes
- implement staff development program
- adhere to legal requirements and codes of practice
- develop staff records system
- conduct ongoing performance measures
- communicate effectively with staff members
- develop contingency plans
- develop strategies to review team performance
- monitor and review staff.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- discuss all government legislative requirements relating to staffing the business operation

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- explain work health and safety (WHS) responsibilities and procedures for managing hazards
- summarise relevant industry awards or enterprise agreements
- outline staff development pathways
- identify training course options for staff development
- summarise staff counselling, grievance and disciplinary procedures
- identify unfair dismissal legislation and procedures.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the Management and Leadership – Small and Micro Business field of work and include access to:

- business equipment and resources
- relevant legislation, regulations, standards and codes
- relevant workplace documentation and resources
- case studies or where possible, real situations
- interaction with others.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBSUS201 Participate in environmentally sustainable work practices

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to effectively measure current resource use and carry out improvements, including reducing the negative environmental impact of work practices.

It applies to individuals, working under supervision or guidance, who are required to follow workplace procedures and instructions, and work in an environmentally sustainable manner within scope of competency, authority and own level of responsibility.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Industry Capability – Sustainability

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify current resource use	1.1 Identify workplace environmental and resource efficiency issues 1.2 Identify resources used in own work role 1.3 Document and measure current usage of resources using appropriate techniques 1.4 Record and file documentation measuring current usage, using

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ELEMENT	PERFORMANCE CRITERIA
	technology (such as software systems) where applicable 1.5 Identify and report workplace environmental hazards to appropriate personnel
2. Comply with environmental regulations	2.1 Follow workplace procedures to ensure compliance 2.2 Report breaches or potential breaches to appropriate personnel
3. Seek opportunities to improve resource efficiency	3.1 Follow organisational plans to improve environmental practices and resource efficiency 3.2 Work as part of a team, where relevant, to identify possible areas for improvements to work practices in own work area 3.3 Make suggestions for improvements to workplace practices in own work area

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.3, 2.1, 3.1	• Recognises and interprets textual information to establish job requirements from relevant information
Writing	1.3, 1.4, 1.5, 2.2	• Completes documents using required formats
Oral Communication	1.5, 2.2, 3.3	• Articulates ideas clearly and uses simple and relevant language to identify and report issues to designated person
Numeracy	1.3	• Calculates basic metric measurements to determine resource usage
Navigate the world of work	2.1	• Understands and adheres to legal and regulatory responsibilities related to own work
Interact with others	1.5, 2.2, 3.2, 3.3	• Selects and uses appropriate conventions and protocols when communicating with co-workers in range of work contexts • Collaborates and cooperates with others to achieve joint outcomes
Get the work	1.1-1.4, 3.1, 3.3	• Implements actions as per plan, taking some responsibility for sequencing and timing of tasks

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done		• Uses main features and functions of digital tools to complete work tasks and access information • Analyses current practices to identify opportunities for improvement.

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBSUS201 Participate in environmentally sustainable work practices	BSBSUS201A Participate in environmentally sustainable work practices	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBSUS201 Participate in environmentally sustainable work practices

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- locate and interpret a range of environment/sustainability legislation and procedural requirements
- participate in and support discussions for an improved resource efficiency process
- identify, document and measure usage of resources
- collaborate with team members on suggestions for improving workplace practices.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify environmental and resource hazards/risks as well as environmental or sustainability legislation, regulations and codes of practice applicable to own role
- outline sustainability requirements in the workplace
- identify reporting channels and procedures to report breaches and potential issues
- identify where to find environmental and resource efficiency systems and procedures.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the sustainability field of work and include access to:

- documentation, information and resources related to workplace environmental and resource efficiency issues
- office equipment and resources
- case studies and, where possible, real situations

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- interaction with others.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBSUS501 Develop workplace policy and procedures for sustainability

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to develop and implement a workplace sustainability policy and to modify the policy to suit changed circumstances.

It applies to individuals with managerial responsibilities who undertake work developing approaches to create, monitor and improve strategies and policies within workplaces and engage with a range of relevant stakeholders and specialists.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Industry Capability – Sustainability

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Develop workplace sustainability policy	1.1 Define scope of sustainability policy 1.2 Gather information from a range of sources to plan and develop policy 1.3 Identify and consult stakeholders as a key component of the policy development process 1.4 Include appropriate strategies in policy at all stages of work for

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ELEMENT	PERFORMANCE CRITERIA
	minimising resource use, reducing toxic material and hazardous chemical use and employing life cycle management approaches 1.5 Make recommendations for policy options based on likely effectiveness, timeframes and cost 1.6 Develop policy that reflects the organisation's commitment to sustainability as an integral part of business planning and as a business opportunity 1.7 Agree to appropriate methods of implementation, outcomes and performance indicators
2. Communicate workplace sustainability policy	2.1 Promote workplace sustainability policy, including its expected outcome, to key stakeholders 2.2 Inform those involved in implementing the policy about expected outcomes, activities to be undertaken and assigned responsibilities
3. Implement workplace sustainability policy	3.1 Develop and communicate procedures to help implement workplace sustainability policy 3.2 Implement strategies for continuous improvement in resource efficiency 3.3 Establish and assign responsibility for recording systems to track continuous improvements in sustainability approaches
4. Review workplace sustainability policy implementation	4.1 Document outcomes and provide feedback to key personnel and stakeholders 4.2 Investigate successes or otherwise of policy 4.3 Monitor records to identify trends that may require remedial action and use to promote continuous improvement of performance 4.4 Modify policy and or procedures as required to ensure improvements are made

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description

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Reading	1.1, 1.2, 4.2, 4.3	• Identifies, analyses and evaluates complex textual information to determine legislative and regulatory requirements, trends and outcomes
Writing	1.2-1.7, 2.1, 2.2, 3.1, 3.3, 4.1, 4.3, 4.4	• Researches, plans and prepares documentation using format and language appropriate to context, organisational requirements and audience
Oral Communication	1.2, 1.3, 2.1, 2.2, 3.1, 4.1	• Presents information and seeks advice using language appropriate to audience • Participates in discussions using listening and questioning to elicit the views of others and to clarify or confirm understanding
Numeracy	1.5, 4.3	• Interprets and uses mathematical equations to calculate numerical information relating to time durations and costs
Navigate the world of work	1.1-1.6, 3.1, 4.4	• Develops, monitors and modifies organisational policies and procedures in accordance with legislative requirements and organisation goals
Interact with others	1.2, 1.3, 2.1, 2.2, 3.1, 3.3, 4.1, 4.3	• Selects and uses appropriate conventions and protocols when communicating with internal and external stakeholders to seek or share information • Plays a lead role in consulting and negotiating positive outcomes with a range of stakeholders
Get the work done	1.2, 1.4-1.7, 2.3, 2.4, 3.1, 3.2, 3.3, 3.5, 3.6, 4.1, 4.3, 4.4	• Plans, organises and implements work activities of self and others that ensure compliance with organisational policies and procedures, and legislative requirements • Sequences and schedules complex activities, monitors implementation, and manages relevant communication • Uses systematic, analytical processes in relatively complex, situations, setting goals, gathering relevant information, and identifying and evaluating options against agreed criteria • Evaluates outcomes of decisions to identify opportunities for improvement

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBSUS501 Develop workplace policy and	BSBSUS501A Develop workplace policy and procedures	Updated to meet Standards for Training Packages	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
procedures for sustainability	for sustainability	Minor edits to clarify performance criteria	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBSUS501 Develop workplace policy and procedures for sustainability

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- scope and develop organisational policies and procedures that comply with legislative requirements and support the organisation's sustainability goals covering at a minimum:
  - minimising resource use
  - resource efficiency
  - reducing toxic material and hazardous chemical use
  - employing life cycle management approaches
  - continuous improvement
- plan and implement sustainability policy and procedures including:
  - agreed outcomes
  - performance indicators
  - activities to be undertaken
  - assigned responsibilities
  - record keeping, review and improvement processes
- consult and communicate with relevant stakeholders to generate engagement with sustainability policy development, implementation and continuous improvement
- review and improve sustainability policies.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline the environmental or sustainability legislation, regulations and codes of practice applicable to the organisation identify internal and external sources of information and explain how they can be used to plan and develop the organisation's sustainability policy

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- explain policy development processes and practices
- outline organisational systems and procedures that relate to sustainability
- outline typical barriers to implementing policies and procedures in an organisation and possible strategies to address them.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the sustainability field of work and include access to:

- relevant legislation, regulations, standards and codes
- relevant workplace documentation and resources
- case studies and, where possible, real situations
- interaction with others.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBWHS201 Contribute to health and safety of self and others

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to work in a manner that is healthy and safe in relation to self and others and to respond to emergency incidents. It covers following work health and safety (WHS) and emergency procedures and instructions, implementing WHS requirements and participating in WHS consultative processes.

It applies to individuals who require a basic knowledge of WHS to carry out work in a defined context under direct supervision or with some individual responsibility, in a range of industry and workplace contexts.

NOTE: The terms 'occupational health and safety' (OHS) and 'work health and safety' (WHS) are equivalent and generally either can be used in the workplace. In jurisdictions where the Model WHS *Act* has not been implemented RTOs are advised to contextualise the unit of competency by referring to the existing State/Territory OHS legislative requirements.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Regulation, Licensing and Risk – Work Health and Safety

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Work safely	1.1 Follow provided safety procedures and instructions when

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ELEMENT	PERFORMANCE CRITERIA
	working 1.2 Carry out pre start systems and equipment checks according to workplace procedures 1.3 Follow workplace procedures for responding to emergency incidents
2. Implement work safety requirements	2.1 Identify designated persons to whom queries and concerns about safety in the workplace should be directed 2.2 Identify existing and potential hazards in the workplace, report them to designated persons and record them according to workplace procedures 2.3 Identify and implement WHS procedures and work instructions 2.4 Identify and report emergency incidents and injuries to designated persons according to workplace procedures 2.5 Identify WHS duty holders and their duties for own work area
3. Participate in WHS consultative processes	3.1 Contribute to workplace meetings, inspections and other WHS consultative activities 3.2 Raise WHS issues with designated persons according to organisational procedures 3.3 Take actions to eliminate workplace hazards and reduce risks

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 1.3, 2.1, 2.3, 2.4, 2.5	• Identifies and interprets information in relation to WHS and emergency incidents
Writing	1.2, 2.2, 2.4, 3.2	• Uses structures and language appropriate to audience and context in reports giving factual information
Oral Communication	2.2, 2.3, 2.4, 3.1, 3.2	• Uses structures and language appropriate to audience and context in reports, descriptions, opinions and explanations • Extracts meaning from reports,

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		descriptions, opinions and explanations
Navigate the world of work	1.1, 1.2, 1.3, 2.1,2.2, 2.3, 2.4, 2.5, 3.1, 3.2, 3.3	• Takes responsibility for following WHS legal requirements • Follows protocols and procedures related to own role • Seeks assistance from others when WHS issues are beyond scope of immediate responsibilities
Get the work done	1.1, 1.2, 1.3, 2.2, 2.3, 2.4, 3.1, 3.3	• Plans, organises and implements routine tasks in order to optimise health and safety • Selects and implements actions from predetermined procedures

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBWHS201 Contribute to health and safety of self and others	BSBWHS201A Contribute to health and safety of self and others	Updated to meet Standards for Training Packages Minor edits to clarify intent of performance criteria	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBWHS201 Contribute to health and safety of self and others

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- follow all relevant procedures and instructions relating to work health and safety (WHS) and emergency incidents
- identify and report hazards to designated personnel
- contribute to WHS consultative processes.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain workplace safety procedures and instructions including:
  - checking systems and equipment
  - conducting routine work operations
  - requirements for personal protective equipment (PPE)
  - how to report incidents and injuries
- explain emergency procedures including those for fires and incidents
- define the meaning of commonly used hazard signs and safety symbols
- summarise the duty holder responsibilities, as specified in WHS Acts, regulations and codes of practice, of:
  - self and fellow workers
  - persons conducting businesses or undertakings (PCBUs)
  - officers
  - others in the workplace
- explain the difference between hazards and risks

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- describe typical WHS hazards that may be present in the workplace, the harm they can cause and how this harm occurs
- outline the process of hazard identification and risk reduction.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced by individuals carrying out work health and safety duties in the workplace and include access to:

- relevant organisational policies, standard operating procedures and work instructions
- relevant Acts, regulations, codes of practice
- workplace tools, equipment and resources
- personal protective equipment appropriate to the role and work area.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBWHS501 Ensure a safe workplace

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to establish, maintain and evaluate the organisation's work health and safety (WHS) policies, procedures and programs in the relevant work area, according to WHS legislative requirements. It takes a systems approach and addresses compliance with relevant legislative requirements.

This unit applies to managers working in a range of contexts who have, or are likely to have responsibility for WHS as part of their broader management role. It is relevant for people with obligations under WHS legislation, for example persons conducting a business or undertaking (PCBUs) or officers, as defined by relevant legislation.

NOTE: The terms 'occupational health and safety' (OHS) and 'work health and safety' (WHS) are equivalent and generally either can be used in the workplace. In jurisdictions where the Model WHS Legislation has not been implemented RTOs are advised to contextualise the unit of competency by referring to the existing State/Territory OHS legislative requirements.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Regulation, Licensing and Risk – Work Health and Safety

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*

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ELEMENT	PERFORMANCE CRITERIA
1 Establish a WHS management system in a work area	1.1 Locate, adapt, adopt and communicate WHS policies that clearly define the organisation's commitment to complying with WHS legislation 1.2 Identify duty holders and define WHS responsibilities for all workplace personnel in the work area according to WHS legislation, policies, procedures and programs 1.3 Identify and approve financial and human resources required by the WHS management system (WHSMS)
2 Establish and maintain effective and compliant participation arrangements for managing WHS in a work area	2.1 Work with workers and their representatives to set up and maintain participation arrangements according to relevant WHS legislation 2.2 Appropriately resolve issues raised through participation and consultation arrangements according to relevant WHS legislation 2.3 Promptly provide information about the outcomes of participation and consultation to workers and ensure it is easy for them to access and understand
3 Establish and maintain procedures for effectively identifying hazards, and assessing and controlling risks in a work area	3.1 Develop procedures for ongoing hazard identification, and assessment and control of associated risks 3.2 Include hazard identification at the planning, design and evaluation stages of any change in the workplace to ensure that new hazards are not created by the proposed changes and existing hazards are controlled 3.3 Develop and maintain procedures for selecting and implementing risk controls according to the hierarchy of control and WHS legislative requirements 3.4 Identify inadequacies in existing risk controls according to the hierarchy of control and WHS legislative requirements, and promptly provide resources to enable implementation of new measures 3.5 Identify requirements for expert WHS advice, and request this advice as required
4 Evaluate and maintain a work area WHS management system	4.1 Develop and provide a WHS induction and training program for all workers in a work area as part of the organisation's training program 4.2 Use a system for WHS record keeping to allow identification of patterns of occupational injury and disease in the organisation, and to maintain a record of WHS decisions made, including reasons for the decision 4.3 Measure and evaluate the WHSMS in line with the

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ELEMENT	PERFORMANCE CRITERIA
	organisation's quality systems framework 4.4 Develop and implement improvements to the WHSMS to achieve organisational WHS objectives 4.5 Ensure compliance with the WHS legislative framework to achieve, as a minimum, WHS legal requirements

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 4.2, 4.3, 4.5	• Organises, evaluates and critiques ideas and information from WHS legislation, policies, procedures and programs
Writing	1.1, 2.3, 3.2, 3.5, 4.1, 4.2	• Produces WHS policies, procedures and programs • using appropriate vocabulary, grammatical structure and conventions to produce • Records WHS decisions according to organisational requirements
Oral communication	1.1, 2.1, 2.2, 2.3	• Presents and seeks information from others using structure and language suitable for the audience • Provides information on resolution of WHS issues varying level of technical vocabulary to suit audience
Numeracy	1.3	• Selects from, and applies, an expanding range of mathematical and problem solving strategies in identifying financial and human resources required
Navigate the world of work	1.1, 1.2, 2.1, 2.2, 3.3, 3.4, 4.5	• Monitors adherence to legal and regulatory rights and responsibilities for self and others in relation to WHS • Takes responsibility for developing, implementing and reviewing policies, procedures and processes in accordance with organisational and legislative requirements
Interact with others	1.1, 2.1, 2.3, 3.5	• Plays a lead role in situations requiring effective collaboration demonstrating the ability to guide discussions and negotiate agreeable outcomes • Provides feedback to others in forms they can

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		understand and use
Get the work done	1.1, 1.3, 2.1, 2.2, 2.3, 3.2, 3.3, 3.4, 3.5, 4.1, 4.2 4.3, 4.4, 4.5	• Develops plans or processes to manage relatively complex, WHS management tasks with an awareness of how they contribute to operational and strategic goals • Uses systematic, analytical processes, setting goals, gathering relevant information, and identifying and evaluating options against agreed criteria • Considers whether, and how, others should be involved, using consultative or collaborative processes as an integral part of the decision-making process • Uses digital systems and tools to enter, store and retrieve relevant information

Range of Conditions

This section specifies different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

WHS legislation must include:	• applicable Commonwealth and state or territory WHS Acts, regulations and codes of practice.

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBWHS501 Ensure a safe workplace	BSBWHS501A Ensure a safe workplace	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBWHS501 Ensure a safe workplace

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- establish, implement, maintain and evaluate a work health and safety (WHS) management system for a work area of an organisation in accordance with WHS legislation including policies, procedures and record keeping
- ensure organisational WHS compliance
- establish, implement, maintain and evaluate effective and compliant participation arrangements for managing WHS including identifying duty holders, identifying and approving the required resources and developing and implementing a training program
- establish, implement, maintain and evaluate procedures for effectively identifying hazards, and assessing and controlling risks using the hierarchy of risk control
- provide information and complete documentation for a WHS management system
- identify requirements for and request expert WHS advice.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify and detail relevant WHS Acts, regulations and codes of practice
- specify relevant WHS organisational policies, procedures, programs and practices
- explain hazard identification and risk-management processes
- describe the hierarchy of risk control and how it is applied in the workplace
- specify in-house and WHS legislative reporting requirements.

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Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced by individuals carrying out work health and safety duties in the workplace and include access to:

- organisational WHS policies and procedures
- WHS legislation, regulations and codes of practice
- case studies and, where possible, real situations
- interaction with others.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBWHS504 Manage WHS risks

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to conduct work health and safety (WHS) risk management processes.

It applies to individuals who manage WHS risks, based on the organisation's WHS management system (WHSMS), WHS information system (WHSIS) and risk-management approach (as covered in BSBWHS503 Contribute to the systematic management of WHS risk). These individuals will work in a range of WHS roles across all industries and apply a substantial knowledge base and well-developed skills in a wide variety of WHS contexts.

NOTE: The terms 'occupational health and safety' (OHS) and 'work health and safety' (WHS) are equivalent and generally either can be used in the workplace. In jurisdictions where the Model WHS Legislation has not been implemented RTOs are advised to contextualise the unit of competency by referring to the existing State/Territory OHS legislative requirements.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Regulation, Licensing and Risk – Work Health and Safety

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Access information and	1.1 Identify sources of information and data

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ELEMENT	PERFORMANCE CRITERIA
data on WHS hazards and risk management	1.2 Obtain information and data to determine the nature and scope of hazards, the range of harms they may cause, and how these harms are caused 1.3 Obtain information and data to determine techniques, tools and processes to assess risk associated with identified hazards, and identify risk control options
2 Prepare to manage WHS risks	2.1 Apply knowledge of the organisation's WHSMS and WHSIS to identify WHS risk management requirements 2.2 Apply knowledge of WHS legislation to identify duty holders and legislative requirements for WHS risk management
3 Develop and implement WHS risk-management processes	3.1 Apply techniques, tools and processes to identify hazards, assess associated risks and identify risk control options 3.2 Apply knowledge of hazards and risks to select appropriate risk controls 3.3 Develop and implement a risk control plan and evaluate risk controls 3.4 Carry out hazard identification and risk management according to organisational and legal requirements

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 1.3	• Organises, interprets evaluates and critiques ideas and information in relation to WHS risk management
Writing	3.1, 3.2, 3.3, 3.4	• Uses industry specific terminology and appropriate formats to draft and develop risk control plans and processes • Records results of risk-management processes according to organisational requirements
Navigate the world of work	2.1, 2.2, 3.4	• Monitors adherence to legal, regulatory and organisational rights and responsibilities for self and others in relation to WHS risk management

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Interact with others	3.1, 3.2, 3.3	• Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective group interaction and taking a leadership role when required
Get the work done	1.2, 1.3, 3.1, 3.2, 3.3	• Uses logical planning processes, and an increasingly intuitive understanding of context, to identify relevant information and risks, and to identify and evaluate strategies and resources for risk management planning • Sequences and schedules complex activities, monitors implementation, and manages relevant communication in relation to risk management planning • Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information, identifying and evaluating options against agreed criteria • Uses common digital systems and tools to locate and store information

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBWHS504 Manage WHS risks	BSBWHS504A Manage WHS hazards and risks	Updated to meet Standards for Training Packages. Title change	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBWHS504 Manage WHS risks

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- access information and data on hazards and how to manage associated risks
- identify duty holders and legislative requirements for work health and safety (WHS) risk management
- use the organisation's WHS management system (WHSMS) and WHS information system (WHSIS) to conduct the following risk management processes:
  - identify hazards and potential hazards
  - assess the associated risks
  - identify control options
  - select suitable options
  - develop and implement a risk control plan
  - evaluate risk controls
- carry out hazard identification and risk management.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe the basic principles of workplace incident, injury and disease causation
- explain the meanings of 'hazard' and 'risk' and how they differ
- identify formal and informal communication and consultation processes and key personnel related to communication
- describe how the characteristics and composition of the workforce impact on WHS risk and the management of WHS, including:
  - communication skills
  - cultural background and diversity

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  - gender
  - labour market changes
  - language, literacy and numeracy levels of the workforce
  - structure and organisation of the workforce, including part-time, casual and contract workers; shift rosters and geographical location
  - workers with specific needs and limitations
  - workplace culture in relation to alcohol and other drug use
- identify internal and external sources of WHS information and data and how to access them
- explain the limitations of generic hazard identification and risk assessment checklists and risk ranking processes
- outline methods for providing evidence of compliance with WHS legislation
- describe the nature of workplace processes (work flow, planning and control) and hazards relevant to the workplace
- describe organisational culture as it impacts on the work team
- summarise organisational WHS policies, procedures, processes and systems
- list other functional areas that impact on the management of WHS
- outline the principles and practices of a systematic approach to managing WHS
- outline Commonwealth and state or territory WHS Acts, regulations, codes of practice, standards and guidance material and other publications relevant to the organisation
- outline risk management as a duty of persons conducting businesses or undertakings or officers under WHS legislation
- describe the roles and responsibilities of individuals and parties under WHS legislation
- outline standard industry controls for a range of hazards
- identify techniques, tools and processes for identifying health and safety hazards and assessing and controlling the associated risks, including:
  - hazard and risk checklists
  - hazard hunts
  - job safety analyses
  - manifests and registers, including for dangerous goods, hazardous chemicals and plant
  - safe work method statements
  - surveys using questionnaires, interviews and other survey techniques
  - workplace inspections and walk-throughs.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced by individuals carrying out work health and safety duties in the workplace and include access to:

- workplace policies and procedures
- office equipment and resources

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- relevant Acts, regulations, codes of practice, standards and guidelines relating to risks found in the workplace
- case studies and, where possible, real situations.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBWOR404 Develop work priorities

Modification History

Release	Comments
Release 2	This version first released with BSB Business Services Training Package Version 1.1. Version created to correct mapping table information
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to monitor and obtain feedback on own work performance and access learning opportunities for professional development.

This unit applies to individuals who are required to design their own work schedules and work plans and to establish priorities for their work. They will typically hold some responsibilities for the work of others and have some autonomy in relation to their own role.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Industry Capability – Workplace Effectiveness

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan and complete own work schedule	1.1 Prepare workgroup plans which reflect consideration of resources, client needs and workgroup targets 1.2 Analyse and incorporate work objectives and priorities into personal schedules and responsibilities

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ELEMENT	PERFORMANCE CRITERIA
	1.3 Identify factors affecting the achievement of work objectives and establish contingencies and incorporate them into work plans 1.4 Efficiently and effectively use business technology to manage and monitor planning completion and scheduling of tasks
2. Monitor own work performance	2.1 Identify and analyse personal performance through self-assessment and feedback from others on the achievement of work objectives 2.2 Seek and evaluate feedback on performance from colleagues and clients in the context of individual and group requirements 2.3 Routinely identify and report on variations in the quality of service and performance in accordance with organisational requirements
3. Co-ordinate professional development	3.1 Assess personal knowledge and skills against organisational benchmarks to determine development needs and priorities 3.2 Research and identify sources and plan for opportunities for improvement in consultation with colleagues 3.3 Use feedback to identify and develop ways to improve competence within available opportunities 3.4 Identify, access and complete professional development activities to assist career development 3.5 Store and maintain records and documents relating to achievements and assessments in accordance with organisational requirements

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Learning	3.1, 3.2, 3.3, 3.4	• Develops strategies to reflect on own performance, obtain feedback, and plan and source professional development opportunities
Reading	1.2, 2.1, 2.3, 3.1, 3.5	• Recognises and interprets textual information from relevant sources to understand organisation's policies and practices

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Writing	1.1, 1.3, 2.2, 2.3, 3.2, 3.5	• Prepares written reports and workplace documentation that communicate complex information clearly and effectively
Oral Communication	2.2, 2.3, 3.2	• Provides or seeks information using language suitable to audience and context • Employs listening and questioning techniques to confirm understanding
Numeracy	1.1, 1.2, 1.3	• Interprets numerical information related to budgets and timeframes
Navigate the world of work	1.2, 2.1, 2.3, 3.1, 3.5	• Identifies and understands roles and responsibilities in relation to organisational objectives, policies and procedures
Interact with others	2.2, 2.3, 3.2	• Selects and uses appropriate practices when communicating with internal and external stakeholders to seek or share information • Establishes and builds rapport and relationships with others to foster a culture of trust and honesty in communications
Get the work done	1.1-1.4, 2.3, 3.1, 3.2, 3.4, 3.5	• Plans, organises and implements tasks to meet organisational requirements • Systematically gathers and analyses information and evaluates options in order to anticipate potential problems and develop contingency plans • Uses the main features and functions of digital technologies and tools to complete work tasks efficiently and effectively

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBWOR404 Develop work priorities	BSBWOR404B Develop work priorities	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBWOR404 Develop work priorities

Modification History

Release	Comments
Release 2	This version first released with BSB Business Services Training Package Version 1.1. Version created to correct mapping table information
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- prepare and communicate own work plan
- schedule work objectives and tasks to support the achievement of the workgroup goals
- review own work performance against workgroup objectives through self-assessment and seeking and acting on feedback from clients and colleagues
- plan and access learning opportunities to extend personal work competencies.

Note: if a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain how business technology applications can be used to schedule tasks and plan work
- explain techniques to prepare personal plans and establish priorities
- identify methods to identify and prioritise personal learning needs
- outline a range of professional development options
- explain methods to elicit, analyse and interpret feedback
- provide a detailed explanation of methods that can be used to evaluate own performance.

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Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the industry capability - workplace effectiveness field of work and include access to:

- workplace documentation including policies and procedures, and benchmarks for work group productivity and performance
- workplace equipment and resources
- case studies and, where possible, real situations
- interaction with others.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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BSBWOR502 Lead and manage team effectiveness

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to lead teams in the workplace and to actively engage with the management of the organisation.

It applies to individuals working at a managerial level who facilitate work teams and build a positive culture within their work teams. At this level, work will normally be carried out using complex and diverse methods and procedures requiring the exercise of considerable discretion and judgement, using a range of problem solving and decision making strategies.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Industry Capability – Workplace Effectiveness

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish team performance plan	1.1 Consult team members to establish a common understanding of team purpose, roles, responsibilities and accountabilities in accordance with organisational goals, plans and objectives 1.2 Develop performance plans to establish expected outcomes, outputs, key performance indicators (KPIs) and goals for work team 1.3 Support team members in meeting expected performance

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ELEMENT	PERFORMANCE CRITERIA
	outcomes
2. Develop and facilitate team cohesion	2.1 Develop strategies to ensure team members have input into planning, decision making and operational aspects of work team 2.2 Develop policies and procedures to ensure team members take responsibility for own work and assist others to undertake required roles and responsibilities 2.3 Provide feedback to team members to encourage, value and reward individual and team efforts and contributions 2.4 Develop processes to ensure that issues, concerns and problems identified by team members are recognised and addressed
3. Facilitate teamwork	3.1 Encourage team members and individuals to participate in and to take responsibility for team activities, including communication processes 3.2 Support the team in identifying and resolving work performance problems 3.3 Ensure own contribution to work team serves as a role model for others and enhances the organisation's image for all stakeholders
4. Liaise with stakeholders	4.1 Establish and maintain open communication processes with all stakeholders 4.2 Communicate information from line manager/management to the team 4.3 Communicate unresolved issues, concerns and problems raised by team members and follow-up with line manager/management and other relevant stakeholders 4.4 Evaluate and take necessary corrective action regarding unresolved issues, concerns and problems raised by internal or external stakeholders

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description

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Reading	1.1, 4.4	• Analyses and interprets textual information from the organisation's policies, goals and objectives to establish team goals or to determine corrective action
Writing	1.2, 2.1, 2.2, 2.4, 4.2, 4.3, 4.4	• Prepares written reports and workplace documentation that communicate complex information clearly and effectively
Oral Communication	1.1, 2.3, 3.1, 4.1, 4.2, 4.3	• Engages in discussions or provides information using appropriate vocabulary and non-verbal features • Uses listening and questioning techniques to confirm understanding and to engage the audience
Navigate the world of work	1.1, 2.1, 2.2, 3.3	• Understands how own role contributes to broader organisational goals • Modifies or develops policies and procedures to achieve organisational goals
Interact with others	1.1, 1.3, 2.2, 2.3, 3.1, 3.2, 4.2, 4.3	• Selects and uses appropriate conventions and protocols when communicating with diverse stakeholders • Uses interpersonal skills to gain trust and confidence of team and provides feedback to others in forms that they can understand and use • Adapts personal communication style to build positive working relationships and to show respect for the opinions, values and particular needs of others • Plays a lead role in situations requiring effective collaboration, demonstrating high level conflict resolution skills and ability to engage and motivate others
Get the work done	1.2, 2.1, 2.2, 2.4, 3.2, 4.1, 4.3, 4.4	• Develops, implements and monitors plans and processes to ensure team effectiveness • Monitors and actively supports processes and development activities to ensure the team is focused on work outcomes • Plans for unexpected outcomes and implements creative responses to overcome challenges

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
BSBWOR502 Lead and manage team effectiveness	BSBWOR502B Ensure team effectiveness	Updated to meet Standards for Training Packages	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
		Title change	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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Assessment Requirements for BSBWOR502 Lead and manage team effectiveness

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- use leadership techniques and strategies to facilitate team cohesion and work outcomes including:
  - encouraging and fostering shared understanding of purpose, roles and responsibilities
  - identifying and resolving problems
  - providing feedback to encourage, value and reward others
  - modelling desired behaviour and practices
- develop policies and procedures to ensure team members take responsibility for own work and assist others to undertake required roles and responsibilities
- establish processes to address issues and resolve performance issues
- support team to meet expected performance outcomes including providing formal and informal learning opportunities as needed
- develop performance plans with key performance indicators (KPIs), outputs and goals for individuals or the team which incorporate input from stakeholders
- communicate effectively with a range of stakeholders about team performance plans and team performance
- facilitate two-way flow of information between team and management relevant to team performance
- evaluate and take necessary corrective action regarding unresolved issues, concerns and problems raised by internal or external stakeholders.

Note: if a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- explain how group dynamics can support or hinder team performance

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- outline strategies that can support team cohesion, participation and performance
- explain strategies for gaining consensus
- explain issue resolution strategies.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the industry capability - workplace effectiveness field of work and include access to:

- workplace documents
- case studies and, where possible, real situations
- office equipment and resources
- interaction with others.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

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CPCCDE3014A Remove non-friable asbestos

Modification History

New to CPC08

Replaces unit CPCCDE3012A Encapsulate and remove asbestos

Not equivalent

Unit Descriptor

This unit of competency specifies the outcomes required to remove non-friable asbestos containing material (ACM). The unit includes preparing, containing and removing non-friable ACM, and includes knowledge of decontamination and disposal requirements.

Application of the Unit

Site location for work may be either domestic or commercial, and may be a demolition site, a new work site or an existing structure being renovated, extended, restored or maintained. Project sites may be construction sites and may also include ships, soils in relation to the non-friable asbestos removal process, and fences.

Licensing/Regulatory Information

Occupational licenses are required nationally.

Work must be completed according to relevant legislative, industry, customer and organisational requirements, including work health and safety (WHS) policies and procedures.

Regulatory mechanisms apply to this unit. This unit is required for all ACM removal workers engaged in the removal of non-friable ACM. Candidates are advised to check for regulatory requirements.

Pre-Requisites

CPCCOHS1001A Work safely in the construction industry

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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Prepare for asbestos removal.	1.1	Work instructions and asbestos removal control plan (ARCP) are obtained and confirmed for preparation purposes.
		1.2	***Safety requirements*** and data gathered from an on-site assessment, an asbestos register where available, and other information sources are used to prepare for a safe and compliant removal process.
		1.3	***Tools, equipment*** and ***personal protective equipment*** (PPE) consistent with job requirements are selected to carry out tasks and checked for serviceability; and faults are rectified or reported prior to commencement.
		1.4	ARCP is accessed according to legislative and company requirements, and understood.
2	Prepare asbestos removal area and removal site.	2.1	***Non-friable asbestos containing materials*** to be removed are identified, referring to the asbestos register or following clarification by an approved competent person as required and according to ***workplace procedures***.
		2.2	Signage and barricade requirements are identified and implemented to delineate the work area.
		2.3	Decontamination procedure is tested according to workplace procedures.
		2.4	Materials and equipment required for removal of ACM

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			from ***project sites*** are identified, checked and prepared for operation.
		2.5	Processes are undertaken to ensure the safety of the site, including deactivating or securing ***utilities*** where necessary prior to commencing work.
3	Isolate removal site.	3.1	***Requirements to isolate the removal site*** safely are identified from the ARCP, and implemented according to legislative and company requirements.
		3.2	Boundaries of asbestos removal site are designated according to ARCP requirements.
		3.3	Occupants, neighbours and other affected parties are notified according to legislation and within limits of own responsibility and the code of practice.
4	Carry out asbestos removal process.	4.1	***Asbestos is removed*** from work area and work site as specified by the supervisor and in the appropriate manner, ensuring the safe use of tools and according to ARCP, legislative and regulatory requirements, and codes of practice.
		4.2	Removed ***asbestos is contained***, wrapped or otherwise sealed, and placed into removal bags or bins, sealed, labelled and, where loaded into a truck, the tray or skip is lined prior to removal of ACM from site according to regulatory requirements and company standards.
5	Carry out decontamination process.	5.1	Decontamination of the work area and tools is carried out according to workplace procedures, ARCP and regulatory requirements.
		5.2	***Decontamination of asbestos removal workers is carried out*** according to workplace procedures, ARCP and regulatory requirements.
		5.3	Asbestos removal and decontamination equipment is removed from the area according to ARCP and regulatory requirements.

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6	Clean up work site.	6.1	Work area is cleared and materials disposed of according to legislation, regulations, codes of practice and job specification.
		6.2	Plant, tools and equipment are cleaned, decontaminated, checked, maintained, removed from the work area, and stored according to manufacturer recommendations and regulatory requirements.
7	Contribute to and use documentation in line with regulatory requirements.	7.1	Contribution is made within limits of own responsibility to the preparation and use of ***documentation*** for regulatory notification processes according to legislative and company requirements.
		7.2	Steps are taken within limits of own responsibility to ensure clearance inspection requirements are met and clearance certificate is gained from a competent person or licensed asbestos assessor.
		7.3	Contribution is made within limits of own responsibility to the preparation and use of an emergency plan according to legislative and company requirements.

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication and appropriate level of language skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and apply:
    - documentation from a variety of sources
    - drawings and specifications
  - use language and concepts appropriate to cultural differences

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- initiative and enterprise skills to:
  - evaluate own actions and make judgements about performance and necessary improvements
  - identify and report faults in tools, equipment and materials to appropriate personnel
- planning and organising skills to:
  - set out work
  - recognise procedures, follow instructions and contribute to workplace responsibilities, such as current environmental and safety systems and the ARCP
- teamwork skills to:
  - coordinate own work with others to action tasks
  - relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- self-management skills to:
  - work independently and in teams to read and interpret relevant documentation and to prepare for non-friable asbestos removal tasks according to the recommended safe work method and ARCP
  - set up the asbestos removal area and removal site according to the safe work method and ARCP
  - check, fit and use PPE, and hand and power tools safely
  - apply general WHS procedures for construction work, including:
    - identifying, avoiding and eliminating electrical hazards
    - working safely at heights and in confined spaces
    - applying safe work practices to the use of tools appropriate to ACM removal
    - handling hazardous materials safely
    - applying safe work methods for the removal of non-friable asbestos
- follow correct cleaning, decontamination and disposal procedures

Required knowledge

- range of materials manufactured using asbestos, the type of asbestos used in each material, and the usual applications associated with the material, together with an understanding of:
  - health effects caused by exposure to ACM and requirement for safe handling and removal
  - health impacts on the community and requirement for safe handling and disposal
- general WHS procedures for construction work as required, including identifying and mitigating risks
- health hazards associated with friable ACM and circumstances that may change the nature of ACM from non-friable to friable, such as:
  - weathering
  - wear and tear
  - application of tools and equipment
  - accidental damage

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- licensing requirements for the use of specific equipment, such as excavators
- safe work methods for the removal of non-friable asbestos
- requirements of current legislation and standards relating to asbestos safety, and the decontamination, transport and disposal of asbestos waste
- general construction terminology
- handling requirements of differing types of asbestos materials
- hazards associated with removal processes
- work area procedures
- job safety analysis (JSA) and safe work method statements (SWMS) if required for construction
- safety data sheets (SDS)
- materials storage and hazardous waste management
- method of operation, and cleaning, use and maintenance requirements of equipment
- plans, drawings and specifications, asbestos registers and register amendments
- quality requirements relating to the removal of non-friable asbestos
- risk assessment processes and contingency planning relating to the removal of non-friable asbestos
- techniques associated with enclosing and removing asbestos
- types, characteristics, uses and limitations of plant and equipment involved in enclosing and removing asbestos
- workplace and equipment safety requirements
- purpose and application of documentation for notification; and use of ARCP and clearance inspections

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, providing that simulated or project-based assessment techniques fully replicate workplace conditions, materials, activities, responsibilities and procedures.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person should demonstrate the ability to: • obtain and apply work instructions for the safe and correct removal of non-friable asbestos • set up the work area and test equipment for use in the removal process of non-friable asbestos • isolate the site prior to removal, complying with regulatory requirements

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	• remove non-friable asbestos safely and comply with regulatory requirements • contain the ACM and ensure its handling and disposal are safe and comply with requirements • decontaminate self, work equipment, and the work site safely and correctly • complete documentation that supports the removal process within limits of own responsibility.
Context of and specific resources for assessment	This unit is to be assessed using standard and authorised work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or Australian standards' requirements. Resource implications for assessment include: • an induction procedure and requirement • realistic tasks or simulated tasks covering the mandatory task requirements • relevant specifications and work instructions • tools and equipment appropriate to applying safe work practices • support materials appropriate to activity • workplace instructions relating to safe work practices and addressing hazards and emergencies • research resources, including industry-related systems information • safety data sheets. Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
Method of assessment	Assessment methods must: • satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package • include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application • reinforce the integration of employability skills with workplace tasks and job roles • confirm that competency is verified and able to be transferred to other circumstances and environments.

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	Validity and sufficiency of evidence requires that: • competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace • where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge • all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence. Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed. Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Safety requirements will be specified from a range of sources that include:	• asbestos removal control plan
	• company policies and procedures, including:
	  • accessing toilets and other amenities
	  • managing work hours to minimise risk from tiredness
	  • working in heat and avoiding heat stress
	• JSA
	• legislation and regulations, including the Code of Practice for the Safe Removal of Asbestos
	• operating manuals and specifications for materials and equipment
	• SWMS
	• asbestos register.

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Tools and equipment may require separate licensing for use and may include:	• high efficiency particulate air (HEPA) vacuum cleaners to comply with AS3544-1988 and AS4260-1997 as amended from time to time • atomiser and water spray bottles (not pressurised) • hoses and spray fittings • barricades, including tape, para-webbing and fencing • bars (crow and pinch) • bolt cutters • buckets • cold chisels • excavators • hand drills (manual and low-speed only) • fire extinguishers • hammers • hand tools (full kit) • ladders conforming to construction regulations • scaffolds • scrapers • shovels and spades • staple guns.

Personal protective equipment will be specified to the requirements of the job and must include:	• protective clothing, such as:
	  • disposable coveralls with fitted hood and cuffs
	  • safety footwear (pull-on, not lace-up)
	  • protective eyewear
	  • disposable or protective gloves
	• correct face fitting and use of respiratory protective equipment (RPE)
	• respiratory protection required for the job, including class P1 and P2 face masks
	• spare sets of PPE.

Materials may include:	• approved and branded plastic bags, including heavy-duty polythene bags (200 μm minimum thickness) • duct tape • foam infill spray • acrylic paint to seal ACM • polyvinyl alcohol (PVA) adhesive as spray to seal ACM • rags or other material wipes (used once) • signs • 200 μm unused (not recycled) plastic sheeting or drop sheet.
Non-friable asbestos containing materials	• asbestos cement • asbestos cement moulded guttering • asbestos cement sheets

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may include: Note: • Non-friable asbestos is also known as bonded asbestos • ACM notionally listed as non-friable may become friable due to weathering or damage	• asbestos tiles • bitumastic felts and materials • adhesives and glues • compressed asbestos cement panels • floor vinyl covering • mortar • resinous backing board • sealant mastic • tape.

Workplace procedures may include:	• environmental requirements, such as:
	  • clean-up management
	  • dust and noise management
	  • notification to occupants, neighbours and other affected parties
	  • sedimentation control
	  • vibration management
	  • waste management, including the safe disposal of ACM
	• quality requirements, such as:
	  • internal company quality policy and standards
	  • manufacturer specifications
	  • relevant regulations, including Australian standards
	  • workplace operations and procedures.

Project sites may include:	• residential, commercial, industrial and public buildings • plant, equipment and fire boards (e.g. friction plant and gaskets) • demolition sites • electricity supply authority or work site • fences • ships and other forms of transport • sites for new building development.
Utilities may include:	• air conditioning • electricity • water services.

Requirements to isolate the removal site:	• will reflect the nature of the site
	• must comply with legislative requirements and the ARCP
	• may include:
	  • using barriers
	  • using signage
	  • ensuring occupants are aware of the need to stay away

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	from the removal site • ensuring isolation has occurred by a licensed electrician and that this is documented.
Asbestos is removed in a manner that complies with legislative and company requirements, and may include:	• wet method (most preferred): • saturate material by gently spraying with water and surfactant mixture (PVA in water ratio of 5:1) • remove materials in sections with the minimum amount of cutting and separation and using hand tools as appropriate • place removed sections in appropriate containers or packaging • Note: The application of the wet asbestos removal method requires the disconnection of the building's power supply and use of a temporary power source fitted with earth leakage and residual current device (RCD) • dry method (least preferred): • to be used only where conditions prohibit use of the wet spray method, i.e. in the vicinity of electrical conductors • fully encapsulate the work area with plastic sheeting • use air respirators appropriate to the job • ensure removal methods minimise the production of airborne material, for example the use of asbestos vacuum cleaners for shadow vacuuming **(Note:** domestic vacuum cleaners even fitted with a HEPA filter are unsuitable) • place removed material immediately in appropriate containers and dampen with sprayed mist.
Asbestos is contained and sealed using a range of techniques, including:	• double-bagging • using heavy-duty polythene bags (200 μm minimum thickness) labelled with an appropriate warning • using drums or bins in good condition with well-fitting lids labelled with appropriate warning signage or labels. **Note:** If too large for a bin or bag, a skip or vehicle tray may be used provided it is double-lined with heavy-duty thick plastic sheeting. When ACMs are loaded on a truck tray, the ACMs must be wetted down and then fully wrapped and sealed with a layer of 200 μm sheeting or bagged. Labelling must occur.
Decontamination of asbestos removal workers is carried out:	• **using a range of techniques, including**: • 'buddy' vacuum**i**ng • decontamination unit for large non-friable removals in certain circumstances • wet wiping.
Documentation may	• air-monitoring results, where necessary

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include:	• asbestos register • notification to regulator of asbestos removal work • clearance certificates • asbestos removal control plans • procedures for the WHS management system and the emergency plan • equipment test reports • health-monitoring program • RPE face fits • competency training certificates.

Unit Sector(s)

Construction

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CPCCLDG3001A Licence to perform dogging

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit specifies the outcomes required to perform slinging techniques, including the selection and inspection of lifting gear and/or the directing of the crane operator in the movement of the load when the load is out of view of the crane/ operator for licensing purposes.

Application of the Unit

Application of the unit

This unit covers the scope of work to demonstrate competency in the application of slinging techniques, selection and inspection of lifting gear and/or the directing of the crane/ operator in the movement of the load.

This unit is based upon the National Standard for Licensing Persons Performing High Risk Work.

This unit in its current form meets state and territory licensing requirements. Any alteration will result in a unit which is not acceptable to regulators for the purpose of licensing.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units Nil

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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan job.	1.1. ***Site information*** is obtained and related to the task. 1.2. ***Hazard*** s and potential hazards associated with the slinging and directing of loads are identified. 1.3. ***Hazard control measures*** consistent with ***appropriate standards*** are identified to ensure the safety of personnel and equipment. 1.4. The weight, dimensions and centre of gravity of the load are identified and assessed. 1.5. Suitable lifting/slinging points on the load are identified. 1.6. Appropriate ***lifting equipment*** needs are assessed. 1.7. Appropriate ***communication methods*** are assessed with ***crane***/ operators and other ***appropriate personnel***. 1.8. Manufacturer's specifications/information is obtained for special loads where necessary.
2. Select and inspect equipment.	2.1. Lifting equipment appropriate to the task is selected. 2.2. Lifting equipment is inspected for serviceability. 2.3. Damaged or excessively worn lifting equipment is identified, labelled and rejected.

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ELEMENT	PERFORMANCE CRITERIA
	2.4. Appropriate communication methods for the crane/operator and appropriate personnel are selected. 2.5. Appropriate ***communication equipment*** is selected and its serviceability is checked. 2.6. Appropriate ***personal protective equipment*** (PPE) is selected and checked.
3. Prepare site and equipment.	3.1. Hazard prevention/control measures are applied consistent with appropriate standards to ensure the safety of personnel and equipment. 3.2. Appropriate slinging method is selected. 3.3. Lifting equipment is prepared and assembled where appropriate. 3.4. Load destination is prepared.
4. Perform task.	4.1. Lifting equipment is attached and secured to the lifting hook using appropriate techniques. 4.2. Lifting hook is positioned over the load centre of gravity. 4.3. Lifting equipment is attached and secured to the load in an appropriate manner. 4.4. Tag line is attached and secured where appropriate. 4.5. Test lift is conducted to ensure security of load. 4.6. Load is moved maintaining stability and control at all times. 4.7. Appropriate communication methods and ***communication signals*** are applied to safely coordinate the load movement both within sight and out-of-sight of crane operator. 4.8. The load is landed to ensure that it is stable and secure from movement. 4.9. Lifting equipment is removed or disconnected from load and prepared for next task or storage.
5. Shut down job and clean up.	5.1. Unserviceable lifting equipment inspected and rejected. 5.2. ***Defective equipment*** is isolated and tagged. 5.3. Lifting equipment is stored in accordance with procedures and appropriate standards. 5.4. Hazard prevention/control measures are removed where appropriate. 5.5. Excess materials from the work area are removed (where applicable).

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ELEMENT	PERFORMANCE CRITERIA
	5.6. Defects are reported and recorded according to procedures and appropriate action is taken.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills for this unit are:

- communication techniques in the workplace including whistles, hand signals and use of fixed channel two-way radios
- communication skills at a level sufficient to communicate with other site personnel
- calculate rated capacity of lifting equipment
- apply different methods for making temporary connections to loads using fibre and synthetic ropes
- ability to interpret rated capacity and working load limit tags
- hazard identification and control
- slinging techniques
- selection and inspection of lifting equipment
- directing crane operators in the moving of loads in a safe manner, using a slewing crane
- inspection and care of a wide range of lifting equipment to appropriate Australian Standards and/or manufacturer's specifications.

Required knowledge

Required knowledge for this unit is:

- appropriate mathematical procedures for estimation and measurement of loads
- basic knowledge of types of cranes and their functions
- Commonwealth, state or territory OHS legislation, standards and codes of practice relevant to the full range of techniques for undertaking dogging activities
- load stability and safety factors in line with manufacturer's specifications
- types of lifting equipment and slinging techniques for use, and their limitations and performance in a wide range of conditions (including but not limited to slings, beams, accessories, clamps, work-boxes, bins and pallets)
- understanding of the hierarchy of control.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	Successful assessment of this unit meets the competency requirement of the National Standard for licensing Persons Performing High Risk Work. State/Territory OHS regulators have mandated the use of Assessment Instruments and Instructions for Assessment of this unit which have been endorsed by the national body responsible for OHS matters.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of the ability to: • comply with Commonwealth, state or territory OHS legislation, standards relevant to safe dogging and crane operations. • communicate and work safely with others in the work area. • apply Hazard prevention and control measures consistent with appropriate standards. • apply to move loads in conjunction with cranes including, the reading of tags, slinging, loading, directing and landing loads with a slewing mobile crane with a telescopic boom and a winch, in and out of sight of the crane/ operator, moving four loads of varying shapes, sizes and weights. • use fibre and/or synthetic rope as tag lines, and connecting to loads using clove hitch, rolling hitch, bowline and single sheetbend. • conduct pre and post operational checks of the lifting equipment.
Context of and specific resources for assessment	• Assessment of the safe and effective application of knowledge and skill to workplace tasks (performance) must be undertaken using the national OHS endorsed Assessment Instrument • Assessment of performance must be

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EVIDENCE GUIDE

	undertaken either in the workplace or in a realistically simulated workplace setting
	• Assessors must ensure that the assessment in the workplace is organised through a workplace supervisor to ensure that all the required equipment and materials and a suitable working area is made available to suit the assessment and the workplace
	• Assessment must occur under standard and authorised work practices, safety requirements and environmental constraints
	• Assessment is to comply with the requirements of any relevant Standards or operating procedures for dogging activities
	• Applicants must have access to:
	  • personal protective equipment (PPE) for the purpose of the performance assessment.
	  • four different loads as prescribed in the endorsed assessment instrument
	  • lifting and associated equipment
	  • suitable slewing crane
	  • communication equipment (eg. fixed channel, two-way radios) as applicable.

Method of assessment	Assessment must be conducted using the national OHS endorsed Assessment Instrument. This Instrument provides instruction on the application of the assessment. Assessment may be in conjunction with the assessment of other units of competency. The use of **'simulators'** in the assessment of this unit of competency is **not acceptable**. Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge. Assessment must confirm a reasonable inference that competency is not only able to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
Guidance information for assessment	Further information about endorsed Assessment Instruments may be obtained from state/territory OHS regulators.

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Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Site informationmay include but not be limited to	• local conditions such as access and egress • work method statements.
Hazards may include but not limited to:	• ground stability (eg. ground condition, recently filled trenches, slopes) • overhead hazards (e.g. power lines, service pipes, trees, buildings, etc) • insufficient lighting • traffic (e.g. pedestrians, vehicles, plant) • weather (e.g. wind, lightning, storms) • other specific hazards (e.g. trip hazards, heights, radio interference, etc).
Hazard prevention/control measures	The systematic process of eliminating or reducing the risk to personnel and property through the application of controls. It includes the application of the hierarchy of controls, including: 1. elimination. 2. substitution. 3. isolation. 4. engineered control measures. 5. safe work practices. 6. personal protective equipment.
Appropriate standard s may include:	• codes of practice • legislation • Australian Standards • manufacturer's specifications • industry standards.

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RANGE STATEMENT

Lifting Equipment may include but not limited to:	• fibre ropes • wire ropes • chain • wire and synthetic slings • shackles • eyebolts • beam clamps • plate clamps • spreader beams • lifting beams • pallet forks and cages • concrete kibbles • personnel boxes.
Communication Methods may include but are not limited to:	• written instructions • signage, • hand signals • listening • questioning to confirm understanding • appropriate worksite protocol.
Cranes may include but not limited to:	• tower cranes (including self erecting) • portal boom cranes • vehicle loading cranes • slewing mobile cranes • non-slewing cranes • derrick cranes.
Appropriate personnel may include but are not limited to:	• supervisors • colleagues • managers who are authorised to take responsibility for the workplace or operations.
Communication Equipment may include but not limited to:	• fixed channel two-way radios • whistles • bells.
Personal protective equipment (PPE) may include but not limited to:	• hard hat • safety boots • gloves • high visibility clothing • reflective vest • relevant breathing, hearing, sight, skin and sun protection.
Load destination may include but	• ground

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RANGE STATEMENT

not limited to:	• loading platforms • suspended floors • vehicles.
Communication signals may include but not limited to:	• stop - hand • stop - whistle • hoist up - hand • hoist up - whistle • hoist down - hand • hoist down - whistle • luff boom down - hand • luff boom down - whistle • luff boom up - hand • luff boom up - whistle • telescope out - hand • telescope out - whistle • telescope in - hand • telescope in - whistle • slew left - hand • slew left - whistle • slew right - hand • slew right - whistle.
Defective Equipment may include but not limited to:	• excessive wear • damage • stretched • broken wires • cut/damaged fibres.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

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Co-requisite units Nil

Functional area

Functional area

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CPCCLRG3001A Licence to perform rigging basic level

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit specifies the outcomes required to perform basic rigging work associated with movement of plant and equipment, steel erections, hoists (including mast climbing hoists), placement of pre-cast concrete, safety nets and static lines, perimeter safety screens and shutters; and cantilever crane loading platforms for licensing purposes.

Application of the Unit

Application of the unit

This unit requires the applicant to be able plan the work, select and inspect equipment, set up task, erect structures and plant and dismantle structures and plant.

This unit is based upon the National Standard for Licensing Persons Performing High Risk Work.

This unit in its current form meets state and territory licensing requirements. Any alteration will result in a unit which is not acceptable to regulators for the purpose of licensing.

This unit has a pre-requisite requirement. This requirement may be met by either the successful completion of the unit *CPCCLDG3001A Licence to perform dogging* or holding a valid licence for dogging.

Licensing/Regulatory Information

Refer to Unit Descriptor

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Pre-Requisites

Prerequisite units

CPCCLDG3001A	Licence to perform dogging

Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan job.	1.1. Task to be undertaken is assessed. 1.2. Potential workplace ***hazards*** are identified. 1.3. ***Hazard control measures*** are identified consistent with ***appropriate standards*** to ensure the safety of personnel and equipment. 1.4. Site information is obtained. 1.5. All ***forces and loads*** associated with erecting and dismantling ***structures*** and ***associated plant*** are considered in consultation with ***appropriate personnel***. 1.6. ***Rigging equipment*** and ***associated equipment*** are identified in consultation with appropriate personnel according to ***procedures*** and site information.

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ELEMENT	PERFORMANCE CRITERIA
	1.7. *Safety equipment* is identified.
	1.8. Appropriate ***communication methods*** are identified with appropriate personnel.
2. Select and inspect equipment.	2.1. Rigging equipment and associated equipment are selected and inspected according to procedures and the appropriate standard.
	2.2. Safety equipment is selected and inspected according to procedures.
	2.3. All defective rigging equipment, associated equipment and safety equipment is isolated, reported and recorded according to procedures.
	2.4. ***Communication equipment*** is selected and inspected for serviceability (where applicable.
3. Set up task.	3.1. Appropriate ***hazard prevention***/***control measures*** are applied to the work area according to procedures.
	3.2. ***Ground suitability*** is inspected and checked (where appropriate).
	3.3. Site information is reviewed, interpreted and communicated to appropriate personnel and ***appropriate personnel***.
	3.4. All forces and loads associated with erecting and dismantling structures and associated plant are determined in consultation with appropriate personnel.
	3.5. Safety equipment is fitted and worn correctly (where appropriate).
	3.6. Rigging equipment and associated plant are positioned for work application and stability according to procedures.
	3.7. Methods of applying ***temporary connections*** using fibre rope are applied according to procedures and the appropriate standard.
4. Erect structures and plant.	4.1. Structures and associated plant are erected according to procedures and site information.
	4.2. Stability of structures and associated plant is maintained during erection according to procedures.
	4.3. Work is conducted safely at heights including safe and effective use of safety equipment.
	4.4. Appropriate communication methods and communication equipment, are used to co-ordinate the tasks.
	4.5. Associated plant and rigging equipment is used

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ELEMENT	PERFORMANCE CRITERIA
	according to procedures and the appropriate standard. 4.6. Temporary guys, ties, propping and shoring, including ***flexible steel wire rope***, and tubing, are connected where required. 4.7. Associated equipment is used in a safe and appropriate manner. 4.8. The completed task is inspected according to the appropriate standard. 4.9. Excess materials are removed from the work area (where applicable).
5. Dismantle structures and plant.	5.1. Structures and associated plant are dismantled according to procedures and the appropriate standard. 5.2. Work is conducted safely at heights including safe and effective use of safety equipment. 5.3. Stability of structures and associated plant is maintained during dismantling according to procedures. 5.4. Rigging equipment, associated equipment, safety equipment and associated plant are inspected for damage and defects. 5.5. All defective rigging equipment, associated equipment, associated plant and safety equipment are isolated reported and recorded according to procedures. 5.6. Rigging equipment and associated equipment are stored. according to procedures and the appropriate standard. 5.7. Hazard prevention/control measures are removed (where appropriate).

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

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REQUIRED SKILLS AND KNOWLEDGE

Required skills for this unit are:

- ability to calculate Safe Working Load (SWL) and Working Load Limit (WLL)
- ability to erect and dismantle, level, plumb and stabilise associated plant and structures
- ability to work safely at heights including the correct application of safety equipment.
- accurate interpretation of basic structural charts and structural plans (site information)
- applying methods for making temporary connections of ropes using fibre and synthetic types
- apply methods of splicing and whipping fibre and synthetic ropes
- correct application and use of all rigging and associated equipment
- risk assessment and hazard control strategies
- interpersonal and communication skills at a level sufficient to site/workplace requirements. This includes the relevant communication methods and equipment.
- verify problems and equipment faults and demonstrate appropriate response.

Required knowledge

Required knowledge for this unit is:

- appropriate mathematical procedures for estimation and measurement of loads
- ability to interpret manufacturer's specifications for all plant and equipment use in rigging operations
- knowledge of principles relating to all plant, equipment and structural stability
- knowledge of the types and functions of rigging, safety and associated equipment including an understanding of their limitations.
- organisational and workplace standards, requirements, policies and procedures for rigging
- understanding of the hierarchy of hazard identification and control
- relevant Commonwealth, state or territory and local government OHS legislation, standards and codes of practice for undertaking rigging activities
- understanding of inspection and maintenance requirements of a wide range of appropriate plant and equipment in line with Australian Standards or manufacturer's specifications
- estimation of ground bearing pressures of the full range of soil types and associated ground conditions for setting up plant and equipment.

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Successful assessment of this unit meets the competency requirement of the National Standard for licensing Persons Performing High Risk Work.

State/Territory OHS regulators have mandated the use of Assessment Instruments and Instructions for Assessment endorsed by the national body responsible for OHS matters for the assessment of this unit.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of the ability to:

- comply with OHS licensing legislation.
- effectively communicate and work safely with others in the work area.
- effectively conduct risk assessment and management procedures.
- effectively complete the following tasks:-
  - inspection of all plant and equipment, and
  - installation of a fall arrest system (Static line), and
  - use of a safety harness / fall arrest system, and
  - installation of crane loading platforms and
  - installation of a safety net, and
  - installation of a shutter and safety screen, and
  - demonstrated ability to work safely at heights, and
  - erection of structural steel, and
  - erection of precast panel, and
  - set up and operation of a winch for load movement, and
  - installation of a materials hoist, or
  - installation of a mast climber.
- effectively demonstrate the following knots,

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	bends and hitches:- • Sheet bend, • Becket hitch, • Running bowline, • Double bowline. • effectively demonstrate the following splices and whippings:- • Eye splice, • Back splice, • Short splice, • Sail makers whipping, • Common whipping, • West countryman's
Context of and specific resources for assessment	Assessment of the safe and effective application of knowledge and skill to workplace tasks (performance) must be undertaken using the National OHS endorsed Assessment Instrument. Assessment of performance must be undertaken either in the workplace or in a realistically simulated workplace setting. Assessors must ensure that the assessment in the workplace is organised to ensure that all the required equipment and materials and a suitable working area is made available to suit the assessment and the workplace. Assessment must occur under standard and authorised work practices, safety requirements and environmental constraints. Assessment is to comply with the requirements of any relevant Standards or operating procedures for basic rigging. Applicants must have access to: • personal protective equipment (PPE) for the purpose of the Performance Assessment. • appropriate safety equipment in safe condition • appropriate rigging equipment, associated equipment associated plant in safe condition as described in the endorsed assessment instrument • communication equipment (e.g. two-way

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	radios) where applicable • appropriate materials as required for safe erection of structures • appropriate materials for conducting fibre rope slicing, whipping, knots, bends and hitches.
Method of assessment	Assessment must be conducted using the national OHS endorsed Assessment Instruments. These Instruments provide advice on their application. The use of **'simulators'** in the assessment of this unit of competency is **not acceptable**. Assessment may be in conjunction with the assessment of other units of competency. Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge. Assessment must confirm a reasonable inference that competency is not only able to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
Guidance information for assessment	Further information about endorsed Assessment Instruments may be obtained from state/territory OHS regulators.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Hazards may include but are not limited to:	• ground stability (e.g. ground condition, recently filled trenches, slopes) • overhead hazards (e.g. power lines, service pipes) (**NB**: minimum clearance distance from powerlines or electrical equipment as determined by relevant state authority or

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RANGE STATEMENT

	electrical supply authority.) • traffic (e.g. pedestrians, vehicles, other plant) • insufficient lighting • environmental conditions (e.g. wind, lightning, storms) • other specific hazards (e.g. dangerous materials).
Hazard control measures:	Refers to the systematic process of eliminating or reducing the risk to personnel and property through the application of controls. It includes the application of the hierarchy of control, the six-step preference of control measures to manage and control risk: • elimination • substitution • isolation • engineering control measures • using safe work practices • personal protective equipment.
Appropriate standards may include:	• codes of practice • legislation • Australian Standards • manufacturer's specifications • industry standards (where applicable).
Site Information may include, but not limited to:	• local conditions such as access and egress, • work method statements, • site specific job safety analyses and other site specific documentation as required. • task plans / Schedules and structural plans.
Forces and Loads may include, but not limited to:	• dead loads • live loads • static load • dynamic loads • wind loads.
Structures may include but are not limited to:	• structural steel • precast panels.
Associated plant may include but not limited to:	• static lines • safety nets • hoists

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RANGE STATEMENT

	• mast climbers • loading platforms.
Appropriate personnel may include:	• engineers • supervisors • colleagues • managers who are authorised to take responsibility for the workplace or operations.

Rigging Equipment may include but is not limited to:	• scaffolds
	• elevated work platforms
	• personnel box
	• cantilevered crane loading platforms
	• mast climbers.
	• safety screens and shutters
	• cranes including but not limited to:
	  • non-slewing cranes
	  • mobile slewing cranes
	  • vehicle loading cranes
	  • tower cranes
	  • self-erecting tower cranes
	  • portal boom cranes
	  • derrick cranes
	  • bridge and gantry cranes.

Associated equipment may include but is not limited to:	• all types of power and manually operated lifting gear • fibre ropes • flexible steel wire rope (FSWR) • chains • wire and synthetic slings • shackles • terminations • wedge sockets • eye bolts • beam clamps • plate clamps • rope grips • turnbuckles • rigging screws • chain blocks • lever blocks • lever-action winches

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RANGE STATEMENT

	• sheaves • spreader bars • lifting beams • jacks • levers • skates • wedges • rollers • girder trolley
Procedures may include but is not limited to:	• manufacturer's guidelines (instructions, specifications or checklists) • industry operating procedures, relevant codes of practice • workplace procedures (work instructions, operating procedures, checklists).
Safety Equipment may include but not limited to:	• safety harness • energy absorber • lanyard • inertia reel • static safety lines • safety nets.
Communication Methods may include but is not limited to:	• verbal and non-verbal language • written instructions • signage • hand signals • listening, • questioning to confirm understanding, and appropriate worksite protocol. **NB**: Mobile phones are not to be used for signalling purposes during the rigging process.
Communication equipment may include but is not limited to:	• fixed channel two-way radios
Hazard prevention/control measures may include but is not limited to:	• safety tags on electrical switches/isolators • powerlines are insulated • safety observer used inside exclusion zone • power disconnected • traffic barricades and control • pedestrian barricades • trench covers

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RANGE STATEMENT

	• movement of obstructions • personal protective equipment • adequate illumination • safety shutters and screens.
Ground suitability may include but is not limited to:	• rough uneven ground • backfilled ground • soft soils • hard compacted soil • rock • bitumen • concrete • suspended concrete floors • building roofs • landings • ground bearing pressure.
Appropriate personnel may include but not limited to	• other riggers • doggers • crane operators.
Temporary connections may include but not limited to:	• knots • bends • hitches • spicing • whipping.
Flexible Steel Wire Rope (***FSWR***) includes:	• identification, uses and connections. May include termination for: • static lines, • guys, • purchase systems, • lashing, • cranes, • hoist and winch ropes.

Unit Sector(s)

Unit sector Construction

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Co-requisite units

Co-requisite units Nil

Functional area

Functional area

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FNSORG506 Prepare financial forecasts and projections

Modification History

Release	Comments
Release 1	This version first released with FNS Financial Services Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to plan a financial forecast or projection, identify assumptions and parameters, collect, consolidate and analyse data, make forecasts or projections, document results and obtain approval.

It applies to experienced individuals who use a range of specialist and managerial techniques to plan and carry out their work, and provide direction to others.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Organisational skills

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan preparation timetable	1.1 Identify all critical milestones to ensure financial forecasts and projections can be prepared within timeframes 1.2 Review business plans, financial forecasting and processing systems to identify timeframes and parameters, and any potential conflicts
2. Identify assumptions and parameters	2.1 Review business plans and exception reports to identify and resolve conflicts in assumptions

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ELEMENT	PERFORMANCE CRITERIA
	2.2 Review assumptions and parameters to ensure compliance with organisational policy and procedures 2.3 Analyse current and historical financial reports to establish trends, and examine external environment to gain objective overview
3. Issue instructions and relevant aids for preparation of forecasts and projections	3.1 Issue clear instructions that comply with organisational format to facilitate use and ensure consistent interpretation 3.2 Identify business types to enable selection of effective financial models, and provide training to users to ensure comprehensive understanding and effective use of models
4. Collect, consolidate, model and analyse data	4.1 Review data to ensure consistency with model used and document analysis results clearly 4.2 Collect reliable, valid, complete and comprehensive data 4.3 Process and consolidate data in logical structured format that enables ready analysis according to established timetable
5. Document results and obtain approval	5.1 Document results clearly in suitable format that meets needs of target users 5.2 Obtain all approvals in accordance with management objectives and financial and organisational policy, and distribute results within timetable

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.2, 2.1-2.3, 4.1-4.3, 5.2	• Interprets, analyses and reviews a variety of structurally complex textual information for accuracy, consistency and compliance with legislation and organisational requirements
Writing	2.1, 3.1, 3.2, 4.1-4.3, 5.1, 5.2	• Produces analytical financial reports from an extensive range of data and modelling to clearly and accurately convey forecasts and projections in required formats • Develops content using clear and detailed language organised in a manner that supports the purposes and audience of the document

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Oral Communication	1.1, 1.2, 2.1, 2.2, 3.1, 3.2	• Participates in verbal exchanges using careful listening and questioning techniques to elicit relevant information from others, and clear and direct language to convey instructions and confirm understanding • Uses language, tone and pace appropriate to the audience and environment
Numeracy	1.1, 2.1-2.3, 3.2, 4.1-4.3, 5.1	• Collects, analyses and reviews relevant numerically expressed data, formulae and ratios from a range of sources • Uses advanced mathematical skills to identify assumptions and inconsistencies, and complete accurate result analysis • Performs calculations necessary to estimate timelines and prepare accurate timetables
Navigate the world of work	2.2, 2.3, 3.2, 5.2	• Takes full responsibility for understanding and complying with organisational policy and procedures regarding financial forecasts and projections • Maintains and updates knowledge required to carry out work role
Interact with others	3.2	• Selects and uses appropriate conventions and protocols to gain and elicit information relevant to financial forecasts and projections
Get the work done	1.1, 1.2, 2.1, 2.2, 3.1, 3.2, 4.1-4.3, 5.1, 5.2	• Accepts responsibility for planning, sequencing and scheduling complex tasks and workload according to organisational requirements • Applies systematic and analytical decision-making processes to make forecasts and projections in complex and non-routine situations • Uses formal analytical thinking techniques to identify issues and generate possible solutions • Uses the main features and functions of digital tools to complete work tasks, store data and access information

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
FNSORG506 Prepare financial forecasts and projections	FNSORG506A Prepare financial forecasts and projections	Updated to meet Standards for Training Packages. Minor edits to clarify	Equivalent unit

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Code and title current version	Code and title previous version	Comments	Equivalence status
		intent of performance criteria.	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=c7200cc8-0566-4f04-b76f-e89fd6f102fe

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Assessment Requirements for FNSORG506 Prepare financial forecasts and projections

Modification History

Release	Comments
Release 1	This version first released with FNS Financial Services Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- comply with organisational policy and procedures that relate to the preparation of financial forecasts and projections
- apply standard accounting principles and techniques
- accurately identify assumptions and parameters of forecasts
- collect, consolidate, model and analyse data in a timely manner
- document forecasts and projections, and obtain approval where required.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe relevant financial industry codes of practice
- explain financial forecasting techniques, models and best practice
- identify key users or audience for financial forecasts and projections
- outline factors in the external environment that can impact on financial forecasts
- outline the relevance of historical financial reports to forecasting
- identify and interpret relevant organisational policy and procedures
- explain key requirements of relevant legislation and regulations that influence the financial services industry.

Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance of typical activities experienced in the organisational skills field of work and include access to:

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- office equipment, technology, software and consumables
- an integrated financial software system and data
- organisational policy and procedures documentation.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=c7200cc8-0566-4f04-b76f-e89fd6f102fe

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HLTAID001 Provide cardiopulmonary resuscitation

Modification History

Release	Notes
Release 5	Updated: • assessor requirements statement • foundation skills lead in statement • licensing statement • modification history to reflect 2012 standards Equivalent outcome.
Release 4	Updated mapping information. Changes to assessment requirements. Equivalent outcome.
Release 3	Updated mapping information. Equivalent outcome.
Release 2	Updated mapping information. Equivalent outcome.
Release 1	This version was released in *HLT Health Training Package release 1.0* and meets the requirements of the 2012 Standards for Training Packages. Significant changes to elements and performance criteria. Revised evidence requirements, including volume and frequency of assessment.

Application

This unit describes the skills and knowledge required to perform cardiopulmonary resuscitation (CPR) in line with the Australian Resuscitation Council (ARC) Guidelines.

This unit applies to all workers who may be required to provide CPR, in a range of situations, including community and workplace settings.

Specific licensing /regulatory requirements relating to this competency, including requirements for refresher training should be obtained from the relevant national/state/territory Work Health and Safety Regulatory Authorities.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements define the essential outcomes.	*Performance criteria specify the level of performance needed to demonstrate achievement of the element.*
1. Respond to an emergency situation	1.1 Recognise an emergency situation 1.2 Identify, assess and minimise immediate hazards to health and safety of self and others 1.3 Assess the casualty and recognise the need for CPR 1.4 Seek assistance from emergency response services
2. Perform CPR procedures	2.1 Perform cardiopulmonary resuscitation in accordance with ARC guidelines 2.2 Display respectful behaviour towards casualty 2.3 Operate automated external defibrillator (AED) according to manufacturer's instructions
3. Communicate details of the incident	3.1 Accurately convey incident details to emergency response services 3.2 Report details of incident to workplace supervisor as appropriate 3.3 Maintain confidentiality of records and information in line with statutory and/or organisational policies

Foundation Skills

The Foundation Skills describe those required skills (language, literacy, numeracy and employment skills) that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

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Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ced1390f-48d9-4ab0-bd50-b015e5485705

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Assessment Requirements for HLTAID001 Provide cardiopulmonary resuscitation

Modification History

Release	Notes
Release 5	Updated: • assessor requirements statement • foundation skills lead in statement • licensing statement • modification history to reflect 2012 standards Equivalent outcome.
Release 4	Updated mapping information. Changes to assessment requirements. Equivalent outcome.
Release 3	Updated mapping information. Equivalent outcome.
Release 2	Updated mapping information. Equivalent outcome.
Release 1	This version was released in *HLT Health Training Package release 1.0* and meets the requirements of the 2012 Standards for Training Packages. Significant changes to elements and performance criteria. Revised evidence requirements, including volume and frequency of assessment.

Performance Evidence

The candidate must show evidence of the ability to complete tasks outlined in elements and performance criteria of this unit, manage tasks and manage contingencies in the context of the job role.

There must be evidence that the candidate has completed the following tasks in line with state/territory regulations, first aid codes of practice, Australian Resuscitation Council (ARC) guidelines and workplace procedures:

- Followed DRSABCD in line with ARC guidelines, including:
  - performed at least 2 minutes of uninterrupted single rescuer cardiopulmonary resuscitation (CPR) (5 cycles of both compressions and ventilations) on an adult resuscitation manikin placed on the floor

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  - performed at least 2 minutes of uninterrupted single rescuer CPR (5 cycles both compressions and ventilations) on an infant resuscitation manikin placed on a firm surface
  - responded appropriately in the event of regurgitation or vomiting
  - managed the unconscious breathing casualty
  - followed single rescue procedure, including the demonstration of a rotation of operators with minimal interruptions to compressions
  - followed the prompts of an automated external defibrillator (AED)
- Responded to at least one simulated first aid scenario contextualised to the candidate's workplace/community setting, including:
  - demonstrated safe manual handling techniques
  - provided an accurate verbal or written report of the incident

Knowledge Evidence

The candidate must be able to demonstrate essential knowledge required to effectively complete tasks outlined in elements and performance criteria of this unit, manage tasks and manage contingencies in the context of the work role. This includes knowledge of:

- State/Territory regulations, first aid codes of practice and workplace procedures including:
  - ARC Guidelines relevant to the provision of CPR
  - safe work practices to minimise risks and potential hazards
  - infection control principles and procedures, including use of standard precautions
  - requirements for currency of skill and knowledge
- Legal, workplace and community considerations, including:
  - awareness of potential need for stress-management techniques and available support following an emergency situation
  - duty of care requirements
  - respectful behaviour towards a casualty
  - own skills and limitations
  - consent
  - privacy and confidentiality requirements
  - importance of debriefing
- Considerations when providing CPR, including:
  - airway obstruction due to body position
  - appropriate duration and cessation of CPR
  - appropriate use of an AED
  - chain of survival
  - standard precautions
- Basic anatomy and physiology relating to:
  - how to recognise a person is not breathing normally
  - chest

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- response/consciousness
- upper airway and effect of positional change

Assessment Conditions

Skills must be demonstrated working individually in an environment that provides realistic in-depth, industry-validated scenarios and simulations to assess candidates' skills and knowledge.

Assessment resources must include:

- adult and infant resuscitation manikins in line with ARC Guidelines for the purpose of assessment of CPR procedures
- AED training device
- workplace injury, trauma and/or illness record, or other appropriate workplace incident report form

Simulated assessment environments must simulate the real-life working environment where these skills and knowledge would be performed, with all the relevant equipment and resources of that working environment.

Assessor Requirements

Assessors must satisfy the Standards for Registered Training Organisations (RTOs) 2015/AQTF mandatory competency requirements for assessors.

In addition hold current first aid certificate HLTAID003 or higher.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ced1390f-48d9-4ab0-bd50-b015e5485705

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HLTAID003 Provide first aid

Modification History

Release	Comments
Release 6	Updated: • assessor requirements statement • foundation skills lead in statement • licensing statement • modification history to reflect 2012 standards Equivalent outcome.
Release 5	Updated mapping information. Changes to assessment requirements. Equivalent outcome.
Release 4	Updated mapping information. Equivalent outcome.
Release 3	Updated mapping information.
Release 2	Minor corrections to formatting to improve readability. Equivalent competency outcome.
Release 1	This version was released in *HLT Health Training Package release 1.0* and meets the requirements of the 2012 Standards for Training Packages. Significant changes to elements and performance criteria, changes to scope of unit. New evidence requirements for assessment. Removal of prerequisite unit.

Application

This unit describes the skills and knowledge required to provide a first aid response to a casualty. The unit applies to all workers who may be required to provide a first aid response in a range of situations, including community and workplace settings.

Specific licensing /regulatory requirements relating to this competency, including requirements for refresher training should be obtained from the relevant national/state/territory Work Health and Safety Regulatory Authorities.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements define the essential outcomes.	*Performance criteria specify the level of performance needed to demonstrate achievement of the element.*
1. Respond to an emergency situation	1.1 Recognise an emergency situation 1.2 Identify, assess and manage immediate hazards to health and safety of self and others 1.3 Assess the casualty and recognise the need for first aid response 1.4 Assess the situation and seek assistance from emergency response services
2. Apply appropriate first aid procedures	2.1 Perform cardiopulmonary resuscitation (CPR) in accordance with Australian Resuscitation Council (ARC) guidelines 2.2 Provide first aid in accordance with established first aid principles 2.3 Display respectful behaviour towards casualty 2.4 Obtain consent from casualty where possible 2.5 Use available resources and equipment to make the casualty as comfortable as possible 2.6 Operate first aid equipment according to manufacturer's instructions 2.7 Monitor the casualty's condition and respond in accordance with first aid principles
3. Communicate details of the incident	3.1 Accurately convey incident details to emergency response services 3.2 Report details of incident to workplace supervisor as appropriate 3.3 Maintain confidentiality of records and information in line with statutory and/or organisational policies

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ELEMENT	PERFORMANCE CRITERIA
Elements define the essential outcomes.	*Performance criteria specify the level of performance needed to demonstrate achievement of the element.*
4. Evaluate the incident and own performance	4.1 Recognise the possible psychological impacts on self and other rescuers involved in critical incidents 4.2 Participate in debriefing to address individual needs

Foundation Skills

The Foundation Skills describe those required skills (language, literacy, numeracy and employment skills) that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ced1390f-48d9-4ab0-bd50-b015e5485705

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Assessment Requirements for HLTAID003 Provide first aid

Modification History

Release	Comments
Release 6	Updated: • assessor requirements statement • foundation skills lead in statement • licensing statement • modification history to reflect 2012 standards Equivalent outcome.
Release 5	Updated mapping information. Changes to assessment requirements. Equivalent outcome.
Release 4	Updated mapping information. Equivalent outcome.
Release 3	Updated mapping information.
Release 2	Minor corrections to formatting to improve readability. Equivalent competency outcome.
Release 1	This version was released in *HLT Health Training Package release 1.0* and meets the requirements of the 2012 Standards for Training Packages. Significant changes to elements and performance criteria, changes to scope of unit. New evidence requirements for assessment. Removal of prerequisite unit.

Performance Evidence

e candidate must show evidence of the ability to complete tasks outlined in elements and performance criteria of this unit, manage tasks and manage contingencies in the context of the job role.

There must be evidence that the candidate has completed the following tasks in line with state/territory regulations, first aid codes of practice, Australian Resuscitation Council (ARC) guidelines and workplace procedures:

- Followed DRSABCD in line with ARC guidelines, including:

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  - performed at least 2 minutes of uninterrupted single rescuer cardiopulmonary resuscitation (CPR) (5 cycles of both compressions and ventilations) on an adult resuscitation manikin placed on the floor
  - performed at least 2 minutes of uninterrupted single rescuer CPR (5 cycles both compressions and ventilations) on an infant resuscitation manikin placed on a firm surface
  - responded appropriately in the event of regurgitation or vomiting
  - managed the unconscious breathing casualty
  - followed single rescue procedure, including the demonstration of a rotation of operators with minimal interruptions to compressions
  - followed the prompts of an Automated External Defibrillator (AED)
- Responded to at least two simulated first aid scenarios contextualised to the candidate's workplace/community setting, including:
  - conducted a visual and verbal assessment of the casualty
  - demonstrated safe manual handling techniques
  - post-incident debrief and evaluation
  - provided an accurate verbal or written report of the incident
- Applied first aid procedures for the following:
  - allergic reaction
  - anaphylaxis
  - bleeding control
  - choking and airway obstruction
  - envenomation, using pressure immobilisation
  - fractures, sprains and strains, using arm slings, roller bandages or other appropriate immobilisation techniques
  - respiratory distress, including asthma
  - shock

Knowledge Evidence

The candidate must be able to demonstrate essential knowledge required to effectively complete tasks outlined in elements and performance criteria of this unit, manage tasks and manage contingencies in the context of the work role. This includes knowledge of:

- State/Territory regulations, first aid codes of practice and workplace procedures including:
  - ARC Guidelines relevant to provision of CPR and first aid
  - safe work practices to minimise risks and potential hazards
  - infection control principles and procedures, including use of standard precautions
  - requirements for currency of skill and knowledge
- legal, workplace and community considerations including:
  - awareness of potential need for stress-management techniques and available support following an emergency situation
  - duty of care requirements

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  - respectful behaviour towards a casualty
  - own skills and limitations
  - consent
  - privacy and confidentiality requirements
  - importance of debriefing
- considerations when providing first aid including:
  - airway obstruction due to body position
  - appropriate duration and cessation of CPR
  - appropriate use of an AED
  - chain of survival
  - standard precautions
  - how to conduct a visual and verbal assessment of the casualty
- principles and procedures for first aid management of the following scenarios:
  - abdominal injuries
  - allergic reaction
  - anaphylaxis
  - basic care of a wound
  - bleeding control
  - burns
  - cardiac conditions, including chest pain
  - choking and airway obstruction
  - crush injuries
  - diabetes
  - dislocations
  - drowning
  - envenomation
  - environmental impact, including hypothermia, hyperthermia, dehydration and heat stroke
  - eye and ear injuries
  - fractures
  - febrile convulsions
  - head, neck and spinal injuries
  - minor skin injuries
  - needle stick injuries
  - poisoning and toxic substances
  - respiratory distress, including asthma
  - seizures, including epilepsy
  - shock
  - soft tissue injuries, including strains and, sprains
  - stroke

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  - unconsciousness
- basic anatomy and physiology relating to:
  - how to recognise a person is not breathing normally
  - chest
  - response/consciousness
  - upper airway and effect of positional change
  - considerations in provision of first aid for specified conditions

Assessment Conditions

Skills must be demonstrated working individually in an environment that provides realistic in-depth, industry-validated scenarios and simulations to assess candidates' skills and knowledge.

Assessment resources must include:

- adult and infant resuscitation manikins in line with ARC Guidelines for the purpose of assessment of CPR procedures
- adrenaline auto-injector training device
- AED training device
- placebo bronchodilator and spacer device
- roller bandages
- triangular bandages
- workplace First Aid kit
- workplace injury, trauma and/or illness record, or other appropriate workplace incident report form for written reports
- wound dressings

Simulated assessment environments must simulate the real-life working environment where these skills and knowledge would be performed, with all the relevant equipment and resources of that working environment.

Assessor requirements

Assessors must satisfy the Standards for Registered Training Organisations (RTOs) 2015/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ced1390f-48d9-4ab0-bd50-b015e5485705

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HLTAID009 Provide cardiopulmonary resuscitation

Modification History

Not applicable.

Application

This unit describes the skills and knowledge required to perform cardiopulmonary resuscitation (CPR) in line with the Australian Resuscitation Council (ARC) guidelines.

This unit applies to all persons who may be required to provide CPR, in a range of situations, including community and workplace settings.

Specific licensing/regulatory requirements relating to this competency, including requirements for refresher training should be obtained from the relevant national/state/territory Work Health and Safety Regulatory Authorities.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Respond to an emergency situation.	1.1. Recognise and assess an emergency situation. 1.2. Ensure safety for self, bystanders and casualty. 1.3. Assess the casualty and recognise the need for cardiopulmonary resuscitation (CPR). 1.4. Seek assistance from emergency services.
2. Perform CPR procedures.	2.1. Perform CPR in accordance with the ARC guidelines. 2.2. Display respectful behaviour towards casualty. 2.3. Operate an automated external defibrillator (AED) according to manufacturers' instructions.
3. Communicate details of the incident.	3.1. Accurately convey incident details to emergency services. 3.2. Report details of incident in line with appropriate workplace or site procedures. 3.3. Maintain privacy and confidentiality of information in line with statutory or organisational policies.

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4. Review the incident.	4.1. Recognise the possible psychological impacts on self and other rescuers and seek help when required. 4.2. Contribute to a review of the first aid response as required.

Foundation Skills

The Foundation Skills describe those required skills (language, literacy, numeracy and employment skills) that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Supersedes and not equivalent to HLTAID001 Perform cardiopulmonary resuscitation

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ced1390f-48d9-4ab0-bd50-b015e5485705

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Assessment Requirements for HLTAID009 Provide cardiopulmonary resuscitation

Modification History

Not applicable.

Performance Evidence

Evidence of the ability to complete tasks outlined in elements and performance criteria of this unit in the context of the workplace or community setting.

There must be evidence that the candidate has completed the following tasks in line with State/Territory regulations, first aid codes of practice, first aid guidelines determined by the Australian Resuscitation Council (ARC) and other Australian national peak clinical bodies and workplace or site procedures:

- managed, in line with ARC guidelines, the unconscious, breathing casualty including appropriate positioning to reduce the risk of airway compromise
- managed, in line with ARC guidelines, the unconscious, non-breathing adult, including:
  - performing at least 2 minutes of uninterrupted single rescuer cardiopulmonary resuscitation (CPR) (5 cycles of both compressions and ventilations) on an adult resuscitation manikin placed on the floor
  - following the prompts of an automated external defibrillator (AED) to deliver at least one shock
  - demonstrating a rotation of single rescuer operators with minimal interruptions to compressions
  - responding appropriately in the event of regurgitation or vomiting
  - handing over to emergency services
  - providing an accurate verbal report of the incident
  - reviewing the incident
- managed, in line with ARC guidelines, the unconscious, non-breathing infant, including:
  - performing at least 2 minutes of uninterrupted single rescuer CPR (5 cycles both compressions and ventilations) on an infant resuscitation manikin placed on a firm surface.

Knowledge Evidence

Demonstrated knowledge required to complete the tasks outlined in elements and performance criteria of this unit:

- guidelines and procedures including:
  - relevant ARC guidelines to managing the unconscious breathing and non-breathing casualty and provision of CPR
  - potential incident hazards and risk minimisation processes when providing first aid

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  - infection control procedures, including use of standard precautions and resuscitation barrier devices
  - requirements for currency of skill and knowledge
  - first aid codes of practice
  - appropriate workplace or site procedures relevant to the provision of first aid
- legal, workplace and community considerations, including:
  - duty of care requirements
  - own skills and limitations
  - consent and how it relates to the conscious and unconscious casualty
  - privacy and confidentiality requirements
  - awareness of potential need for stress management techniques and available support for rescuers
- considerations when providing CPR, including:
  - upper airway and effect of positional change
  - appropriate duration and cessation of CPR
  - appropriate use of an AED
  - safety and maintenance procedures for an AED
  - chain of survival
  - how to access emergency services
- techniques for providing CPR to adults, children and infants including:
  - how to recognise that a casualty is unconscious and not breathing normally
  - rate, ratio and depth of compressions and ventilations
  - correct hand positioning for compressions
  - basic anatomy, physiology and the differences between adults, children and infants relating to CPR.

Assessment Conditions

Each candidate to demonstrate skills in an environment that provides realistic in-depth, scenarios and simulations to assess candidates' skills and knowledge.

Due to the nature of this type of training, it is acceptable for the performance evidence to be collected in a simulated environment.

Compression and ventilation skills must be demonstrated on resuscitation manikins following ARC guidelines for the purpose of assessment of CPR procedures.

Assessment must ensure access to:

- adult and infant resuscitation manikins following ARC guidelines for the purpose of assessment of CPR procedures
- AED training devices
- personal protective equipment (PPE).

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Simulated assessment environments must simulate real-life situations where these skills and knowledge would be performed, with all the relevant equipment and resources of that workplace or community environment.

Assessors must satisfy the Standards for Registered Training Organisations' requirements for assessors and must hold this unit or demonstrate equivalent skills and knowledge to that contained within this unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ced1390f-48d9-4ab0-bd50-b015e5485705

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ICPDMT321 Capture a digital image

Modification History

Release	Comments
Release 1	This version first released with ICP Printing and Graphic Arts Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to evaluate and use digital camera technology and alter and upload digital images.

It applies to individuals who may work in a team environment with some responsibility for producing quality outcomes based on requirements.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Digital media technologies

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Assess digital camera qualities	1.1 Camera software compatibility with hardware system is assessed and appropriate software is selected for job 1.2 Pixel resolution of camera is matched to required quality and resolution of outcome 1.3 RAM capacity of camera is checked to be sufficient for number of images required to be captured 1.4 Shutter speed, focal lengths and camera feature modes are assessed as suitable for quality and use of photographic images

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ELEMENT	PERFORMANCE CRITERIA
	required 1.5 Lithium batteries are handled and stored according to work health and safety (WHS) requirements
2 Set up for image capture	2.1 Camera is set up for image composition according to job specifications 2.2 Lighting is arranged according to job specifications 2.3 Light intensity is set for correct exposure
3 Preview image	3.1 Tone curves are adjusted according to job specifications 3.2 Neutral balance of image is arranged and adjusted 3.3 Adjustments to image composition and exposure are made
4 Photograph and upload digital image	4.1 Digital camera is loaded and operated according to manufacturer's and job specifications appropriate to quality of image to be photographed 4.2 File is uploaded on to relevant computer and image saved on hard disk 4.3 Photographic image files are created and stored on computer 4.4 Photographic images are enhanced, cropped and altered electronically to deliver required image 4.5 Photographic images are checked to ensure they meet job brief 4.6 Photographic images are delivered using required delivery mode

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.5, 2.1, 2.2, 3.1, 4.1, 4.5	• Interprets textual information to determine and confirm job requirements
Writing	4.3	• Uses required conventions to name electronic files
Numeracy	1.2-1.4, 2.3	• Recognises mathematical data related to memory capacity • Uses basic mathematical calculations to select

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		appropriate camera features related to shutter speed, focal length or pixel resolutions
Navigate the world of work	1.5	• Adheres to legislative requirements related to own role with specific reference to safety
Get the work done	1.1-1.4, 2.1-2.3, 3.1-3.3, 4.1-4.6	• Plans and implements tasks required to complete jobs according to specifications • Assesses job requirements to make decisions related to camera settings and image outputs • Analyses image quality problems and identifies and implements appropriate correction methods • Understands the purposes, specific functions and key features of common digital systems and tools and operates them effectively to produce digital images

Unit Mapping Information

Code and title current version	**Code and title previous version**	**Comments**	**Equivalence status**
ICPDMT321 Capture a digital image	ICPMM321C Capture a digital image	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a74b7a0f-a253-47e3-8be0-5d426e24131d

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Assessment Requirements for ICPDMT321 Capture a digital image

Modification History

Release	Comments
Release 1	This version first released with ICP Printing and Graphic Arts Training Package Version 1.0.

Performance Evidence

Evidence of the ability to:

- find and use information relevant to the task from various sources
- set up a digital camera correctly and safely
- use a digital camera to:
  - preview and capture THREE digital images
  - transfer images to a computer
  - use relevant software to produce final images that meet job requirements.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- identify and explain the key features of the digital camera that impact on the quality of the photographic image
- determine the safety requirements for handling and storing lithium batteries
- explain how to transfer and store images from a camera to a computer list and describe ways that photographic images can be altered or enhanced electronically
- explain why the required delivery mode is important when preparing a photographic image.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the digital media technologies field of work and include access to:

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- a digital camera
- computer hardware and software
- photographic equipment and materials.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a74b7a0f-a253-47e3-8be0-5d426e24131d

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ICPDMT3460 Incorporate video into multimedia presentations

Modification History

Release	Comments
Release 1	This version first released with ICP Printing and Graphic Arts Training Package Version 4.0.

Application

This unit describes the skills and knowledge required to edit and add video to multimedia presentations.

It applies to individuals who select and use industry standard software and hardware to produce digital video sequences to meet required outcomes.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Digital media technologies

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to incorporate digital video	1.1 Identify job requirements and video specifications 1.2 Identify and select digital video software 1.3 Identify methods for saving and producing multimedia presentation
2. Design digital video	2.1 Select digital video software 2.2 Use digital video editing software to combine video assets 2.3 Control variations in video frame rates 2.4 Apply time stamping techniques to video frames 2.5 Save digital video according to enterprise procedures
3. Edit and present digital	3.1 Edit single and multiple video tracks

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ELEMENT	PERFORMANCE CRITERIA
video	3.2 Join multiple tracks of digital video 3.3 Apply digital effects to modify and integrate digital video tracks 3.4 Apply time encoding to single and multiple edited digital video tracks 3.5 Insert video track into multimedia production sequence 3.6 Test and combine digital video with other digital imaging, sound and animation to create multimedia sequence 3.7 Save and present multimedia sequence with video to client

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	• Evaluates textual information to establish and confirm job requirements
Oral Communication	• Uses clear technical terminology to provide information about video to others
Numeracy	• Uses simple mathematical calculations to verify image quality and image size and to measure frame frequencies and track lengths
Problem Solving	• Determines requirements and makes routine decisions directly related to completion of tasks
Planning and Organising	• Plans and implements tasks required to complete jobs according to specifications
Technology	• Identifies the purposes, functions and features of digital systems and tools used for video recording and editing, and uses them to complete tasks

Unit Mapping Information

Supersedes and is equivalent to ICPDMT346 Incorporate video into multimedia presentations.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a74b7a0f-a253-47e3-8be0-5d426e24131d

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Assessment Requirements for ICPDMT3460 Incorporate video into multimedia presentations

Modification History

Release	Comments
Release 1	This version first released with ICP Printing and Graphic Arts Training Package Version 4.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of the unit, including evidence of the ability to:

- design, compile, edit and present at least two multimedia sequences incorporating video.

In the course of the above the candidate must respond to client requirements and modify video as required.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- factors affecting combining digital videos with other digital imaging, sound and animation in a multimedia sequence
- features and uses of current video software programs
- limiting factors of video production on computers
- methods of obtaining differences of image quality and image size
- data input, processing and output for videos
- process of combining video assets
- process for controlling variations in video frame rates
- process and reason for applying time stamping techniques to video frames.

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Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the area of work.

This includes access to:

- video-editing software
- multimedia output devices
- materials required for construction and editing of sound files.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a74b7a0f-a253-47e3-8be0-5d426e24131d

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PSPPCM023 Manage strategic contracts

Modification History

Release	Comments
1	This unit was released in PSP Public Sector Training Package release 1.0 and meets the Standards for Training Packages. This unit supersedes and is equivalent to PSPPROC607A Manage strategic contracts. • Unit code updated • Content and formatting updated to comply with new standards • All PC transitioned from passive to active voice

Application

This unit describes the skills required to manage contracts for strategic purchases, to effectively minimise risks and achieve value for money to meet an organisation's core objectives. It includes managing the establishment, performance and evaluation of strategic contracts.

This unit applies to those working in roles that involve the acquisition of strategic assets.

The skills and knowledge described in this unit must be applied within the legislative, regulatory and policy environment in which they are carried out. Organisational policies and procedures must be consulted and adhered to.

Those undertaking this unit would work independently seeking advice as required, performing complex tasks in a range of familiar and unfamiliar contexts.

No licensing, legislative or certification requirements apply to unit at the time of publication.

Competency Field

Procurement

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Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section.
1. Manage contract establishment	1.1 Discuss and agree upon requirements of contracts and strategic initiatives with all parties. 1.2 Assign responsibilities for establishing and carrying out procedures to achieve contract outcomes. 1.3 Establish and implement effective communication strategies and processes to assist ongoing communication between internal and external stakeholders and contractors. 1.4 Perform relationship management with all levels of personnel involved in procurement and contract management, within probity boundaries. 1.5 Establish strategic relationships within probity boundaries to improve procurement capability and performance. 1.6 Update risk management plans.
2. Manage contract performance	2.1 Monitor progress of contracts against set targets and performance measures to ensure success of procurement activities. 2.2 Take action to rectify performance where set targets, performance measures and probity requirements are not being met. 2.3 Provide advice and support to solve problems, make improvements and maintain progress. 2.4 Manage disputes promptly according to contractual conditions to achieve resolution and maintain contract performance and progress. 2.5 Seek and negotiate opportunities to continuously improve procurement outcomes with contractors. 2.6 Provide or gain approvals for contract variations that are negotiated and agreed between the parties. 2.7 Provide opportunities for stakeholders and contractors to have input into and receive feedback on progress during the performance of the contract. 2.8 Engage internal and external stakeholders as necessary throughout the life of the contract to maintain progress.
3. Manage contract evaluation	3.1 Evaluate contract performance relative to planned performance measures and in consultation with stakeholders and contractors. 3.2 Undertake dispute resolution where stakeholders and contractors do not agree. 3.3 Detail conclusions against agreed criteria to provide a complete

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	picture of performance of contractors, organisation's procurement processes and value for money. 3.4 Measure performance of strategic initiatives relative to planned outcomes in consultation with industry and other stakeholders. 3.5 Document lessons learnt from evaluations of contracts and strategic initiatives and use to continuously improve future procurement activities. 3.6 Advise contractors and stakeholders of evaluation outcomes.

Foundation Skills

Foundation skills are embedded within the elements and performance criteria of this unit.

Unit Mapping Information

This unit supersedes and is equivalent to PSPPROC607A Manage strategic contracts.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bebbece7-ff48-4d2c-8876-405679019623

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bebbece7-ff48-4d2c-8876-405679019623

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Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bebbece7-ff48-4d2c-8876-405679019623

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Assessment Requirements for PSPPCM023 Manage strategic contracts

Modification History

Release	Comments
1	These Assessment Requirements were released in PSP Public Sector Training Package release 1.0 and meet the Standards for Training Packages. • Assessment Requirements created drawing upon specified assessment information from superseded unit

Performance Evidence

Evidence required to demonstrate competence must satisfy all of the requirements of the elements and performance criteria. If not otherwise specified the candidate must demonstrate evidence of performance of the following on at least one occasion.

- writing complex documents
- managing teams of expert negotiators in functions identifying and resolving strategic contract management issues
- identifying, assessing and implementing opportunities for performance improvement
- manage strategic procurement contracts, contract management plans and sub-plans

Knowledge Evidence

Evidence required to demonstrate competence must satisfy all of the requirements of the elements and performance criteria. If not otherwise specified the depth of knowledge demonstrated must be appropriate to the job context of the candidate.

- Commonwealth, state or territory, and local government legislation, policies, practices and guidelines relating to managing strategic contracts, including environmental purchasing guidance.
- organisational procurement policies, practices and approval processes
- aspects of law of contract, trade practices law, and commercial law relating to managing strategic contracts
- codes of conduct, codes of practice and standards of individual behaviour relating to management of contracts and relationships with contractors
- government procurement environment
- implications of particular contracting arrangements
- whole-of-life considerations
- cultural issues relating to contract management and industry development

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- relationship management at all personnel levels
- environmental, sustainability and corporate social responsibility principles relevant to managing strategic contracts

Assessment Conditions

This unit contains no specific industry-mandated assessment conditions. Guidance on suggested and recommended conditions and methods can be found in the Implementation Guide.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bebbece7-ff48-4d2c-8876-405679019623

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bebbece7-ff48-4d2c-8876-405679019623

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bebbece7-ff48-4d2c-8876-405679019623

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RIICCM202D Identify, locate and protect underground services

Modification History

Release	Comment
1	This unit replaces RIICCM202A Identify, locate and protect underground services.
2	Editorial corrections.
3	Amended Performance Evidence.
4	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

Application

This unit describes a participant's skills and knowledge required to identify, locate and protect underground services in Civil Construction.

This unit is appropriate for those working in operational roles.

Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and Industry sectors. Relevant information must be sourced prior to application of the unit.

Unit Sector

Civil construction

Elements and Performance Criteria

1. Plan and prepare for identify, locate and protect underground services	1.1 Access, interpret and apply underground services documentation and ensure the work activity is compliant 1.2 Obtain, read, interpret, clarify and confirm work requirements 1.3 Identify, obtain and implement traffic signage requirements 1.4 Select, and check for faults, equipment/tools for work activities 1.5 Identify and apply environmental protection requirements

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	1.6 Obtain and prepare information for search requirements prior to making contact with the service provider (Dial Before You Dig) 1.7 Determine location, alignment direction, level and grade of services and/or utilities from the plans and location details
2. Locate underground services	2.1 Obtain details of services and utilities location from the site owners 2.2 Determine emergency numbers, contact details and procedures for types, and owners, of the services/utilities 2.3 Contact owners of the services/utilities and confirm plans and location details 2.4 Select appropriate plant/equipment, and search for services/utilities on which construction may impact 2.5 Use visual or physical means to search for services and/or utilities prior to commencing construction 2.6 Move, protect and support services/utilities from the construction process in conjunction with the service/utility owner 2.7 Report any damage to services/utilities during activity
3. Conduct housekeeping activities	3.1 Clear work area and dispose of or recycle materials 3.2 Clean and maintain condition of equipment, ensure suitability for use, and address/report issues 3.3 Manage/report hazards, and maintain a safe working environment 3.4 Process written records

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit. Further information is available in the Resources and Infrastructure Industry Training Package Companion Volume.

Unit Mapping Information

RIICCM202A Identify, locate and protect underground services

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272

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Assessment Requirements for RIICCM202D Identify, locate and protect underground services

Modification History

Release	Comment
1	This unit replaces RIICCM202A Identify, locate and protect underground services.
2	Editorial corrections.
3	Amended Performance Evidence.
4	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

Performance Evidence

Evidence is required to be collected that demonstrates a candidate's competency in this unit. Evidence must be relevant to the roles within this sector's work operations and satisfy all of the requirements of the performance criteria of this unit and include evidence that the candidate:

- locates and applies applicable documentation, policies and procedures
- implements the requirements, procedures and techniques for the safe, effective and efficient completion of the identification, location and protection of underground services including:
  - selecting and using relevant tools and equipment
  - communicating effectively to clarify instructions/information
  - completion of housekeeping activities
- works effectively with others to undertake and complete the identification, location and protection of underground services in a way that meets all of the required outcomes:
  - using a range of communications techniques and equipment
  - complying with written and verbal reporting requirements and procedures
- demonstrates completion of identifying, locating and protecting underground services that safely, effectively and efficiently meets all of the required outcomes on more than one (1) occasion including:
  - identifying and locating underground services employing appropriate techniques, plant and equipment to search for services and utilities
  - identifying services and owners of services and utilities

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Knowledge Evidence

The candidate must demonstrate knowledge of the following when identifying, locating and protecting underground services:

- accessing, interpreting and applying the organisation and site requirements and procedures for:
  - identifying and reporting on hazards
  - using operational tools and equipment safely and effectively
  - achieving project quality and accuracy
  - using JSA's/JSEA/Safe work methods
  - applying site isolation and traffic control
- planning and organising work activities
- working with civil construction terminology
- identifying types of services/utilities and providers
- using construction principles
- identifying equipment types, characteristics, technical capabilities and limitations
- using safety data sheet and materials handling methods
- carrying out operational, maintenance and basic diagnostic procedures

Assessment Conditions

- An assessor of this unit must satisfy the requirements of the NVR/AQTF or their successors; and Industry regulations for certification and licensing; and,
- this unit is best assessed in the context of this sector's work environment;
- where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of this sector's workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills; and,
- this unit must be assessed in compliance with relevant legislation/regulation and using policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed; and,
- assessment may be conducted in conjunction with the assessment of other Units of Competency; and,
- assessment must confirm consistent performance can be applied in a range of relevant workplace circumstances; and,
- assessors must demonstrate the performance evidence, and knowledge evidence as outlined in this Unit of Competency, and through the minimum years of current* work experience specified below in an Industry sector relevant to the outcomes of the unit; or,
- where the assessor does not meet experience requirements a co-assessment or partnership arrangement must exist between the qualified assessor and an Industry subject matter expert. The Industry subject matter expert should hold the unit being assessed (or an equivalent unit) and/or demonstrate equivalence of skills and knowledge at the unit level. An Industry technical expert must also demonstrate skills and knowledge from the minimum years of current work experience specified below in the Industry sector, including time spent in roles related to the unit being assessed; and,

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- assessor and Industry subject matter expert requirements differ depending on the Australian Qualifications Framework Level (AQF) of the qualification being assessed and/or Industry Sector as follows:

Industry sector	AQF** Level	Required assessor or Industry subject matter expert experience
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Construction	1	1 Year
	2	2 Years
Drilling, Coal Mining and Extractive (Quarrying)	3-6	3 Years
Metalliferous Mining and Civil Construction	3-6	5 Years
Other sectors	Where this Unit is being assessed outside of the Resources and Infrastructure Sectors assessor and/or Industry subject matter expert experience should be in-line with industry standards for the sector in which it is being assessed and where no Industry standard is specified should comply with any relevant regulation.	

*Assessors can demonstrate current work experience through employment within Industry in a role relevant to the outcomes of the Unit; or, for external assessors this can be demonstrated through exposure to Industry by conducting frequent site assessments across various locations.

**Where a unit is being delivered outside of a Qualification the first numeric character in the Unit code should be considered to indicate the AQF level

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272

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RIIWHS202D Enter and work in confined spaces

Modification History

Release	Comment
1	The unit replaces RIIOHS202A Enter and work in confined spaces.
2	Editorial corrections.
3	Amended Application field.
4	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

Application

This unit describes a participant's skills and knowledge required to enter and work in confined spaces in the Resources and Infrastructure Industries.

This unit is appropriate for those working in operational roles undertaking work in confined spaces.

Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and Industry sectors. Relevant information must be sourced prior to application of the unit.

Note: The terms Occupational Health and Safety (OHS) and Work Health and Safety (WHS) are equivalent and generally either can be used in the workplace. In jurisdictions where the National Model WHS Legislation has not been implemented RTOs are advised to contextualise the unit of competency by referring to the existing State/Territory OHS legislative requirements.

Elements and Performance Criteria

1 Plan and prepare for working in confined space	1.1 Access, interpret and apply procedures for confined space entry and the environmental management plan and ensure the work activity is compliant 1.2 Obtain, confirm, clarify and apply work instructions and agreed procedure 1.3 Obtain, confirm, clarify and apply safety requirements

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	1.4 Obtain and confirm authorisation (entry permit) meets regulatory requirements 1.5 Confirm the emergency response procedure is with the stand-by person and understood 1.6 Identify, obtain and implement signage and barrier requirements 1.7 Select tools and equipment for the tasks, check for serviceability and rectify or report any faults 1.8 Identify, confirm and apply the environmental protection requirements 1.9 Position rescue equipment by the entry permit
2 Work in confined space	2.1 Gain access to confined space 2.2 Ensure that the atmosphere is tested and monitored for harmful elements 2.3 Correctly apply tagging and lock-out procedures 2.4 Enter the confined space correctly 2.5 Maintain ongoing communication with the stand-by person 2.6 Comply with entry permit requirements 2.7 Monitor and adhere to allocated entry time
3 Exit confined space	3.1 Exit confined space correctly 3.2 Recover tools, equipment and materials 3.3 Conduct inspection of the confined space 3.4 Secure access to the confined space 3.5 Remove tagging and lock-out 3.6 Accurately complete confined space entry permit
4 Clean up	4.1 Clear work area and dispose of or recycle materials 4.2 Clean, check, maintain and store tools and equipment 4.3 Remove, clean and store barriers and signs

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit. Further information is available in the Resources and Infrastructure Industry Training Package Companion Volume.

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Unit Mapping Information

RIIOHS202A Entering and working in confined spaces

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272

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Assessment Requirements for RIIWHS202D Enter and work in confined spaces

Modification History

Release	Comment
1	The unit replaces RIIOHS202A Enter and work in confined spaces.
2	Editorial corrections.
3	Amended Application field.
4	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

Performance Evidence

Evidence is required to be collected that demonstrates a candidate's competency in this unit. Evidence must be relevant to the roles within this sector's work operations and satisfy all of the requirements of the performance criteria of this unit and include evidence that the candidate:

- locates and applies relevant documentation, policies and procedures
- demonstrates completion of entering and working in confined spaces that safely, effectively and efficiently meets all of the required outcomes on more than one (1) occasion including:
  - obtain appropriate entry permit and instructions for performing work in confined space
  - interpreting and applying safe work method statements
  - apply tagging and lock out
  - selecting, wearing and caring for personal protective equipment applicable to all tasks and environment identified
  - entering the confined space
  - using atmospheric monitoring devices prior to entering the confined space
  - working in the confined space
  - using atmospheric monitoring devices during confined space activity
  - applying safe materials handling methods
  - exiting the confined space
  - remove tagging and lock out

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Knowledge Evidence

The candidate must demonstrate knowledge of enter and work in confined spaces through:

- identifying areas that constitute confined spaces
- complying with site and equipment safety requirements
- complying with the entry and exit procedures, risks and regulations
- types of air contaminants and toxic gases
- identifying the limitations of breathing apparatus
- identifying equipment types, characteristics, technical capabilities and limitations
- complying with site isolation and site control responsibilities and authorities
- locations of safety data sheets (SDS) information and application
- using confined space and Industry terminology

Assessment Conditions

- An assessor of this unit must satisfy the requirements of the NVR/AQTF or their successors; and Industry regulations for certification and licensing; and,
- this unit is best assessed in the context of this sector's work environment;
- where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of this sector's workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills; and,
- this unit must be assessed in compliance with relevant legislation/regulation and using policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed; and,
- assessment may be conducted in conjunction with the assessment of other Units of Competency; and,
- assessment must confirm consistent performance can be applied in a range of relevant workplace circumstances; and,
- assessors must demonstrate the performance evidence, and knowledge evidence as outlined in this Unit of Competency, and through the minimum years of current* work experience specified below in an Industry sector relevant to the outcomes of the unit; or,
- where the assessor does not meet experience requirements a co-assessment or partnership arrangement must exist between the qualified assessor and an Industry subject matter expert. The Industry subject matter expert should hold the unit being assessed (or an equivalent unit) and/or demonstrate equivalence of skills and knowledge at the unit level. An Industry technical expert must also demonstrate skills and knowledge from the minimum years of current work experience specified below in the Industry sector, including time spent in roles related to the unit being assessed; and,
- assessor and Industry subject matter expert requirements differ depending on the Australian Qualifications Framework Level (AQF) of the qualification being assessed and/or Industry Sector as follows:

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Industry sector	AQF** Level	Required assessor or Industry subject matter expert experience
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Construction	1	1 Year
	2	2 Years
Drilling, Coal Mining and Extractive (Quarrying)	3-6	3 Years
Metalliferous Mining and Civil Construction	3-6	5 Years
Other sectors	Where this Unit is being assessed outside of the Resources and Infrastructure Sectors assessor and/or Industry subject matter expert experience should be in-line with industry standards for the sector in which it is being assessed and where no Industry standard is specified should comply with any relevant regulation.	

*Assessors can demonstrate current work experience through employment within Industry in a role relevant to the outcomes of the Unit; or, for external assessors this can be demonstrated through exposure to Industry by conducting frequent site assessments across various locations.

**Where a unit is being delivered outside of a Qualification the first numeric character in the Unit code should be considered to indicate the AQF level

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272

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RIIWHS204D Work safely at heights

Modification History

Release	Comments
1	This unit replaces RIIOHS204A Work safely at heights.
2	Formatting corrections.
3	Inserted Application information.
4	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

Application

This unit describes a participant's skills and knowledge required to work safety at heights in the Resources and Infrastructure Industries.

This unit it appropriate for those working in operational roles where they are required to perform work at heights.

Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and Industry sectors. Relevant information must be sourced prior to application of the unit.

Note: The terms Occupational Health and Safety (OHS) and Work Health and Safety (WHS) are equivalent and generally either can be used in the workplace. In jurisdictions where the National Model WHS Legislation has not been implemented RTOs are advised to contextualise the unit of competency by referring to the existing State/Territory OHS legislative requirements.

Elements and Performance Criteria

1. Identify work requirements	1.1 Access, interpret and apply height safety procedures and ensure the work activity is compliant 1.2 Inspect site to determine layout and physical condition, condition of structures, prevailing weather conditions, equipment requirements and potential hazards

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	1.3 Adhere to WHS requirements 1.4 Identify, select and check safety equipment for serviceability 1.5 Identify, manage and report potential risks and hazards
2. Identify work procedures and instructions	2.1 Consult with authorised personnel to select materials, tools and equipment and check for serviceability 2.2 Select, wear and care for personal protective equipment 2.3 Inspect/install fall protection and perimeter protection equipment 2.4 Identify approved methods of moving tools and equipment to work area and minimise potential hazards associated with tools at heights 2.5 Ensure safety system has been installed correctly 2.6 Select and install appropriate signs and barricades
3. Access and install equipment	3.1 Consult with authorised personnel to ensure anchor fall protection and associated equipment is correctly fitted and adjusted 3.2 Ensure all required equipment is installed 3.3 Use recommended methods to access work area for people, tools and equipment 3.4 Locate tools and materials to eliminate or minimise the risk of items being knocked down
4. Perform work at heights	4.1 Check access from ground to work area and ensure it is safe 4.2 Keep fall equipment in place and adjusted appropriately for movement during work 4.3 Undertake manual handling of materials and equipment 4.4 Locate materials and equipment ensuring that they are safely secured and distributed 4.5 Check safety system periodically for compliance 4.6 Monitor risk control measures to ensure that they are effective and appropriate 4.7 Reassess risk control measures, as required, in accordance with changed work practices and/or site conditions and undertake alterations
5. Clean up work area	5.1 Consult with authorised personnel to ensure safety system is dismantled and removed 5.2 Clear work area and dispose of or recycle materials 5.3 Clean, check, maintain and store tools and equipment

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Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit. Further information is available in the Resources and Infrastructure Industry Training Package Companion Volume.

Unit Mapping Information

RIIOHS204A Working safely at heights

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272

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Assessment Requirements for RIIWHS204D Work safely at heights

Modification History

Release	Comments
1	This unit replaces RIIOHS204A Work safely at heights.
2	Formatting corrections.
3	Inserted Application information.
4	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

Performance Evidence

Evidence is required to be collected that demonstrates a candidate's competency in this unit. Evidence must be relevant to the roles within this sector's work operations and satisfy all of the requirements of the performance criteria of this unit and include evidence that the candidate:

- locates and applies relevant documentation, policies and procedures
- demonstrates completion of working safely at heights that safely, effectively and efficiently meets all of the required outcomes on more than one (1) occasion including:
  - accessing, interpreting and applying technical and safety information for working at heights
  - assessing hazards and risk associated with working at heights and implement control methods
  - selecting wearing and caring for personal protective equipment
  - identifying required safety systems including fall protection and associated equipment
  - checking that fitting, adjusting and anchoring of fall protection and associated equipment is correct
  - performing work safely at heights

Knowledge Evidence

The candidate must demonstrate knowledge of the following when working safely at heights:

- names and functions of equipment, components and materials

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- complying with equipment manufacturer's instructions and specifications
- safe shifting and handling of tools and materials
- adhering to statutory and regulatory authority requirements
- the nature of work undertaken at heights
- complying with heights safety systems
- the processes of providing for safe working practices
- using safety equipment/systems and considerations to facilitate working safely at heights
- complying with safe work methods

Assessment Conditions

- An assessor of this unit must satisfy the requirements of the NVR/AQTF or their successors; and Industry regulations for certification and licensing; and,
- this unit is best assessed in the context of this sector's work environment;
- where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of this sector's workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills; and,
- this unit must be assessed in compliance with relevant legislation/regulation and using policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed; and,
- assessment may be conducted in conjunction with the assessment of other Units of Competency; and,
- assessment must confirm consistent performance can be applied in a range of relevant workplace circumstances; and,
- assessors must demonstrate the performance evidence, and knowledge evidence as outlined in this Unit of Competency, and through the minimum years of current* work experience specified below in an Industry sector relevant to the outcomes of the unit; or,
- where the assessor does not meet experience requirements a co-assessment or partnership arrangement must exist between the qualified assessor and an Industry subject matter expert. The Industry subject matter expert should hold the unit being assessed (or an equivalent unit) and/or demonstrate equivalence of skills and knowledge at the unit level. An Industry technical expert must also demonstrate skills and knowledge from the minimum years of current work experience specified below in the Industry sector, including time spent in roles related to the unit being assessed; and,
- assessor and Industry subject matter expert requirements differ depending on the Australian Qualifications Framework Level (AQF) of the qualification being assessed and/or Industry Sector as follows:

Industry sector	AQF** Level	Required assessor or Industry subject matter expert experience
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Construction	1	1 Year
	2	2 Years

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Drilling, Coal Mining and Extractive (Quarrying)	3-6	3 Years
Metalliferous Mining and Civil Construction	3-6	5 Years
Other sectors	Where this Unit is being assessed outside of the Resources and Infrastructure Sectors assessor and/or Industry subject matter expert experience should be in-line with industry standards for the sector in which it is being assessed and where no Industry standard is specified should comply with any relevant regulation.	

*Assessors can demonstrate current work experience through employment within Industry in a role relevant to the outcomes of the Unit; or, for external assessors this can be demonstrated through exposure to Industry by conducting frequent site assessments across various locations.

**Where a unit is being delivered outside of a Qualification the first numeric character in the Unit code should be considered to indicate the AQF level

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272

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RIIWHS205D Control traffic with stop-slow bat

Modification History

Release	Comment
1	The unit replaces RIIOHS205A Control traffic with stop-slow bat.
2	Editorial corrections; Performance Criteria numbering for element 1 corrected.
3	Amended Application field.
4	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

Application

This unit describes a participant's skills and knowledge required to control traffic with stop-slow bat in the Resources and Infrastructure Industries.

This unit is appropriate for those working in operational roles.

Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and Industry sectors. Relevant information must be sourced prior to application of the unit.

Note: The terms Occupational Health and Safety (OHS) and Work Health and Safety (WHS) are equivalent and generally either can be used in the workplace. In jurisdictions where the National Model WHS Legislation has not been implemented RTOs are advised to contextualise the unit of competency by referring to the existing State/Territory OHS legislative requirements.

Elements and Performance Criteria

1. Plan and prepare	1.1 Access, interpret and apply site traffic plan procedures and ensure the work activity is compliant 1.2 Obtain, confirm, clarify and apply work instructions 1.3 Obtain, confirm, clarify and apply safety requirements 1.4 Identify, obtain and implement signage and devices 1.5 Select tools and equipment, check for serviceability and rectify or report any faults

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	1.6 Identify, confirm, clarify and apply environmental protection requirements
2. Control traffic	2.1 Position or confirm temporary traffic signs and barriers 2.2 Direct traffic correctly 2.3 Control vehicles and pedestrian traffic and ensure safety 2.4 Monitor traffic, make adjustments for changing conditions and position waiting vehicles for smooth traffic flow 2.5 Use hand held stop/slow bats 2.6 Use visibly clear and unobstructed hand signals 2.7 Report traffic offenders
3. Operate communication devices	3.1 Adjust communication device controls for optimum reception/transmission results 3.2 Transmit messages clearly and concisely 3.3 Maintain communication device power supply 3.4 Check communications contact after nominated period of non-contact
4. Clean up	4.1 Remove or cover signs and devices sequentially to provide warning to motorists during shutdown 4.2 Clean, check, maintain and store tools and equipment

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit. Further information is available in the Resources and Infrastructure Industry Training Package Companion Volume.

Unit Mapping Information

RIIOHS205A Control traffic with stop-slow bat

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272

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Assessment Requirements for RIIWHS205D Control traffic with stop-slow bat

Modification History

Release	Comment
1	The unit replaces RIIOHS205A Control traffic with stop-slow bat.
2	Editorial corrections; Performance Criteria numbering for element 1 corrected.
3	Amended Application field.
4	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

Performance Evidence

Evidence is required to be collected that demonstrates a candidate's competency in this unit. Evidence must be relevant to the roles within this sector's work operations and satisfy all of the requirements of the performance criteria of this unit and include evidence that the candidate:

- locates and applies relevant documentation, policies and procedures
- demonstrates completion of controlling traffic with a stop-slow bat that safely, effectively and efficiently meets all of the required outcomes on more than one (1) occasion including:
  - reading and interpreting the work instruction and planning work activity accordingly
  - positioning signage and barriers
  - directing and controlling vehicle traffic
  - directing and controlling pedestrian traffic
  - communicating to drivers and pedestrians clearly using hand signals
  - using approved communication devices such as hand held radios or phones to transmit message and report of offenders
  - removing or covering signs after work completion

Knowledge Evidence

The candidate must demonstrate knowledge of controlling traffic with stop-slow bat through:

- site and equipment safety requirements

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- traffic controlling requirements and procedures
- complying with traffic management plans
- erecting traffic control signage and barricades
- communication device operations
- determine equipment types, characteristics, technical capabilities and limitations
- operational and maintenance procedures for equipment
- detailing site isolation and traffic control responsibilities and authorities
- describing the effects of travel speed and vehicle mass on stopping distances
- interpreting and implementing safe work method statement

Assessment Conditions

- An assessor of this unit must satisfy the requirements of the NVR/AQTF or their successors; and Industry regulations for certification and licensing; and,
- this unit is best assessed in the context of this sector's work environment;
- where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of this sector's workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills; and,
- this unit must be assessed in compliance with relevant legislation/regulation and using policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed; and,
- assessment may be conducted in conjunction with the assessment of other Units of Competency; and,
- assessment must confirm consistent performance can be applied in a range of relevant workplace circumstances; and,
- assessors must demonstrate the performance evidence, and knowledge evidence as outlined in this Unit of Competency, and through the minimum years of current* work experience specified below in an Industry sector relevant to the outcomes of the unit; or,
- where the assessor does not meet experience requirements a co-assessment or partnership arrangement must exist between the qualified assessor and an Industry subject matter expert. The Industry subject matter expert should hold the unit being assessed (or an equivalent unit) and/or demonstrate equivalence of skills and knowledge at the unit level. An Industry technical expert must also demonstrate skills and knowledge from the minimum years of current work experience specified below in the Industry sector, including time spent in roles related to the unit being assessed; and,
- assessor and Industry subject matter expert requirements differ depending on the Australian Qualifications Framework Level (AQF) of the qualification being assessed and/or Industry Sector as follows:

Industry sector	AQF** Level	Required assessor or Industry subject matter expert experience
Drilling, Metalliferous Mining, Coal	1	1 Year

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Mining, Extractive (Quarrying) and Civil Construction	2	2 Years
Drilling, Coal Mining and Extractive (Quarrying)	3-6	3 Years
Metalliferous Mining and Civil Construction	3-6	5 Years
Other sectors	Where this Unit is being assessed outside of the Resources and Infrastructure Sectors assessor and/or Industry subject matter expert experience should be in-line with industry standards for the sector in which it is being assessed and where no Industry standard is specified should comply with any relevant regulation.	

*Assessors can demonstrate current work experience through employment within Industry in a role relevant to the outcomes of the Unit; or, for external assessors this can be demonstrated through exposure to Industry by conducting frequent site assessments across various locations.

**Where a unit is being delivered outside of a Qualification the first numeric character in the Unit code should be considered to indicate the AQF level

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272

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RIIWHS302D Implement traffic management plan

Modification History

Release	Comment
1	The unit replaces RIIOHS302A Implement traffic management plan.
2	Editorial corrections.
3	Amended Application field.
4	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

Application

This unit develops a participant's skills and knowledge required to implement a traffic management plan in Civil construction.

This unit is appropriate for those working in supervisory roles.

Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and Industry sectors. Relevant information must be sourced prior to application of the unit.

Note: The terms Occupational Health and Safety (OHS) and Work Health and Safety (WHS) are equivalent and generally either can be used in the workplace. In jurisdictions where the National Model WHS Legislation has not been implemented RTOs are advised to contextualise the unit of competency by referring to the existing State/Territory OHS legislative requirements.

Elements and Performance Criteria

1 Plan and prepare to implement traffic management plan	1.1 Access, interpret and apply traffic management documentation and ensure the work activity is compliant 1.2 Obtain, read, interpret, clarify and confirm work requirements 1.3 Identify, address and report potential risks, hazards and environmental issues and implement control measures 1.4 Select and wear personal protective equipment appropriate for the work activity

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	1.5 Identify, obtain and implement traffic control signage and devices 1.6 Select, and check for faults, tools and equipment to carry out tasks 1.7 Identify, confirm and apply environmental protection requirements 1.8 Check the designated traffic controllers' training and qualifications for currency 1.9 Advise traffic controllers of the traffic flow requirements
2 Set out the traffic guidance scheme	2.1 Select traffic guidance scheme to suit site conditions, traffic volumes and work activities 2.2 Determine and ensure adherence to work schedule, maximum traffic delays, signals and site communications 2.3 Ensure signs and devices are correctly positioned on the approaches to the work area 2.4 Ensure that signs and devices are positioned and displayed on each approach 2.5 Ensure signs and devices are positioned and displayed laterally 2.6 Ensure traffic is controlled effectively to protect the work crew
3 Monitor traffic guidance scheme	3.1 Ensure traffic flow is monitored and effectiveness of guidance scheme determined 3.2 Monitor work activities and provide guidance to adjust scheme 3.3 Apply process for dealing with traffic controllers who fail to adhere to approved procedures 3.4 Apply procedures to deal with offending motorists
4 Close down traffic guidance scheme	4.1 Ensure traffic is controlled to protect work crew removing traffic control devices 4.2 Ensure signs are removed in sequence to provide maximum warning during removal 4.3 Ensure guidance scheme details are recorded and reported as required 4.4 Ensure incidents are recorded and reported as required
5 Clean up	5.1 Ensure work area is appropriately cleared 5.2 Ensure tools and equipment are cleaned, checked, maintained

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	and stored

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit. Further information is available in the Resources and Infrastructure Industry Training Package Companion Volume.

Unit Mapping Information

RIIOHS302A Implement traffic management plan

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272

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Assessment Requirements for RIIWHS302D Implement traffic management plan

Modification History

Release	Comment
1	The unit replaces RIIOHS302A Implement traffic management plan.
2	Editorial corrections.
3	Amended Application field.
4	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

Performance Evidence

Evidence is required to be collected that demonstrates a candidate's competency in this unit. Evidence must be relevant to the roles within this sector's work operations and satisfy all of the requirements of the performance criteria of this unit and include evidence that the candidate:

- locates and applies relevant documentation, policies and procedures
- works effectively with others to undertake and complete the traffic management plans that meet all of the required outcomes including:
  - complying with written and verbal reporting requirements and procedures
  - communicating clearly and concisely with others to receive and clarify work instructions
  - communicating clearly and concisely with others to resolve coordination requirements prior to commencing and during work activities
- demonstrates completion of implementing traffic management plans that safely, effectively and efficiently meets all of the required outcomes on more than one (1) occasion including:
  - complying with State/Territory regulations on three separate live traffic projects, and
  - completing one (1) project controlling site construction vehicles
  - identify and select traffic guidance scheme according to conditions
  - identify and select traffic guidance scheme according to conditions select and implement signage and device requirements, position and display according to site plan

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- monitor and adjust scheme according to variances in requirements
- apply procedures to deal with non-compliant crew and motorists

Knowledge Evidence

The candidate must demonstrate knowledge of implementing a traffic management plan through:

- accessing, interpreting and applying legislative, organization and site requirements and procedures for:
  - JSAs/JSEA/Safe work method statement
  - potential hazards and risks
  - controlling traffic
  - basic signalling
  - signs and devices
  - radio operations
- identifying equipment types, characteristics, technical capabilities and limitations
- identifying site isolation and traffic control responsibilities and authorities
- identifying quality requirements
- applying civil construction terminology

Assessment Conditions

- An assessor of this unit must satisfy the requirements of the NVR/AQTF or their successors; and Industry regulations for certification and licensing; and,
- this unit is best assessed in the context of this sector's work environment;
- where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of this sector's workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills; and,
- this unit must be assessed in compliance with relevant legislation/regulation and using policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed; and,
- assessment may be conducted in conjunction with the assessment of other Units of Competency; and,
- assessment must confirm consistent performance can be applied in a range of relevant workplace circumstances; and,
- assessors must demonstrate the performance evidence, and knowledge evidence as outlined in this Unit of Competency, and through the minimum years of current* work experience specified below in an Industry sector relevant to the outcomes of the unit; or,

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- where the assessor does not meet experience requirements a co-assessment or partnership arrangement must exist between the qualified assessor and an Industry subject matter expert. The Industry subject matter expert should hold the unit being assessed (or an equivalent unit) and/or demonstrate equivalence of skills and knowledge at the unit level. An Industry technical expert must also demonstrate skills and knowledge from the minimum years of current work experience specified below in the Industry sector, including time spent in roles related to the unit being assessed; and,
- assessor and Industry subject matter expert requirements differ depending on the Australian Qualifications Framework Level (AQF) of the qualification being assessed and/or Industry Sector as follows:

Industry sector	AQF** Level	Required assessor or Industry subject matter expert experience
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Construction	1	1 Year
	2	2 Years
Drilling, Coal Mining and Extractive (Quarrying)	3-6	3 Years
Metalliferous Mining and Civil Construction	3-6	5 Years
Other sectors	Where this Unit is being assessed outside of the Resources and Infrastructure Sectors assessor and/or Industry subject matter expert experience should be in-line with industry standards for the sector in which it is being assessed and where no Industry standard is specified should comply with any relevant regulation.	

*Assessors can demonstrate current work experience through employment within Industry in a role relevant to the outcomes of the Unit; or, for external assessors this can be demonstrated through exposure to Industry by conducting frequent site assessments across various locations.

**Where a unit is being delivered outside of a Qualification the first numeric character in the Unit code should be considered to indicate the AQF level

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272

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SIRXCEG006 Provide online customer service

Modification History

Not applicable.

Application

This unit describes the performance outcomes, skills and knowledge required to interact with customers using online communication tools. It requires the ability to provide information to customers, handle customer difficulties, and provide customer service and support in an online environment.

It applies to individuals who interact with customers online in a diverse range of businesses with an online presence. They operate with some independence, under limited supervision and guidance from others, and within established organisational policies and procedures.

No occupational licensing, certification or specific legislative requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Competency Field

Customer Engagement

Unit Sector

Cross-Sector

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Communicate with customers online.	1.1. Use digital communication tools to communicate with customers online according to organisational online customer

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	service standards and procedures.
	1.2. Communicate with customers online using appropriate communication styles and within designated response times.
	1.3. Use correct spelling and grammar when communicating with customers in written form.
	1.4. Identify and take opportunities to improve customer experience within scope of own responsibility.
	1.5. Promote customer loyalty and repeat business when communicating with customers online.
	1.6. Request referrals, ratings and user-generated content from customers.
	1.7. Monitor customer demand for products and services and inform relevant personnel to ensure customer needs are met.
	1.8. Record customer interactions and feedback according to organisational policies and procedures.
	1.9. Make suggestions for improved customer service standards and procedures to relevant personnel.
2. Respond to customer difficulties online.	2.1. Identify customer difficulties and provide required support.
	2.2. Identify customer dissatisfaction and take action to avoid escalation.
	2.3. Follow organisational online customer service standards and procedures to respond to customer complaints.
	2.4. Refer complex customer complaints to relevant personnel for action.
	2.5. Maintain a professional manner during online customer interactions.
	2.6. Identify consistent and potential customer difficulties and report to relevant personnel to minimise future customer dissatisfaction.
3. Process online refunds and exchanges.	3.1. Identify reasons for refunds and exchanges, and offer a replacement or alternative product or solution to maximise sales opportunities.
	3.2. Process online refunds and exchanges according to organisational policies and procedures.

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Foundation Skills

FOUNDATION SKILLS

Foundation skills essential to performance in this unit, but not explicit in the performance criteria, are listed here, along with a brief context statement.

SKILLS	DESCRIPTION
Self-management skills to:	• maintain professionalism in difficult situations related to customer complaints.
Technology skills to:	• use online technology and tools to communicate with customers.

Unit Mapping Information

No equivalent unit

Links

Companion Volume Implementation Guides - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ca051b1b-5101-4ec2-ac1c-49699303188d

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Assessment Requirements for SIRXCEG006 Provide online customer service

Modification History

Not applicable.

Performance Evidence

Evidence of the ability to complete tasks outlined in elements and performance criteria of this unit in the context of the job role, and:

- identify customer requirements and provide online customer service to address requirements, across four different online customer interactions
- provide service to the above customers following organisational online customer service standards and procedures
- follow organisational customer service standards and procedures to:
  - resolve a customer complaint
  - resolve a customer difficulty
  - process an online refund
  - process an online exchange
- make suggestions for improved online customer service standards and procedures.

Knowledge Evidence

Demonstrated knowledge required to complete the tasks outlined in elements and performance criteria of this unit:

- key legal and ethical considerations as related to online customer service provision:
  - Australian Consumer Law
  - privacy
- organisational policies and procedures:
  - processing refunds and exchanges online
  - recording customer information
- organisational online customer service standards:
  - response times
  - communication styles
  - handling customer complaints
  - reporting customer services issues
- key aspects of online communication:
  - written communication techniques
  - appropriate communication styles

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    - role and use of tone in written communication
    - maintaining brand integrity
- common causes of customer complaints and difficulties in an online environment
- online customer service provision and techniques for:
    - identifying customer dissatisfaction
    - handling customer complaints
    - handling customer difficulties
    - generating customer loyalty
    - building rapport with customers
    - seeking referrals and user generated content
- role and impact of customer feedback in an online environment:
    - positive feedback
    - negative feedback
- commercial impact of:
    - unresolved customer complaints
    - customer dissatisfaction
    - refunds and exchanges.

Assessment Conditions

Skills must be demonstrated in a service industries environment. This can be:

- an industry workplace
- a simulated industry environment.

Assessment must ensure access to:

- relevant documentation:
    - organisational policies and procedures:
        - processing refunds and exchanges online
        - recording customer information
    - organisational online customer service standards:
        - response times
        - communication styles
        - handling customer complaints
        - reporting customer service issues
- information technology hardware and software
- online communication tools
- online information systems
- online customers with whom the individual can interact. These can be:
    - individuals in an industry workplace, or

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- individuals who participate in role plays or simulated activities, set up for the purpose of assessment, in a simulated industry environment.

Assessors must satisfy the Standards for Registered Training Organisations' requirements for assessors.

Links

Companion Volume Implementation Guides - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ca051b1b-5101-4ec2-ac1c-49699303188d

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SIRXMKT002 Use social media to engage customers

Modification History

Not applicable.

Application

This unit describes the performance outcomes, skills and knowledge required to manage the use of social media platforms to interact with customers and promote products and services.

It applies to individuals working in customer service management roles in a diverse range of industry sectors and business contexts that have a social media presence. They operate independently with some responsibility for decision making, and within established organisational policies and procedures.

No occupational licensing, certification or specific legislative requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Competency Field

Marketing

Unit Sector

Cross-Sector

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Prepare to use social media.	1.1. Review organisational social media requirements and policies and procedures. 1.2. Research various social media platforms, and identify and compare their audience, functionality and reach.

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	1.3.Research emerging trends in social media platform use. 1.4.Select social media platforms that meet brand needs and reach target customer. 1.5.Source information and content from internal and external sources for use on social media platforms 1.6.Develop content in line with target audience, brand cultures and social media requirements as required. 1.7.Source or create a social media calendar.
2. Use social media to enhance customer engagement.	2.1.Create opportunities to attract and promote user-generated content. 2.2.Respond to customers in a timely manner, directing them to relevant information as required. 2.3.Identify potential brand damage, and take action to prevent escalation. 2.4.Promptly respond to customer complaints and issues according to social media policies and procedures. 2.5.Adhere to legal and ethical practices for social media use.
3. Promote products and services.	3.1.Identify social media marketing opportunities and curate and post content to promote products and services. 3.2.Use social media to promote special offers, events and promotions as required. 3.3.Post content according to social media policies and procedures.
4. Review social media use.	4.1.Track social media activity using monitoring tools. 4.2.Identify opportunities to improve customer experience, and recommend to relevant personnel. 4.3.Update the look and feel of the social media account to maximise effectiveness. 4.4.Report on social media engagement and reach to relevant personnel.

Foundation Skills

Foundation skills essential to performance in this unit, but not explicit in the performance criteria are listed here, along with a brief context statement.

SKILLS	DESCRIPTION
Reading skills to:	• interpret technical terminology relevant to the use of social media platforms.

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Writing skills to:	• use correct spelling and grammar in social media posts.
Technology skills to:	• upload images, text files, PDF files, audio files, video files and link associated files • import and export software functions • conduct online research for appropriate content • compare social media platform functionality.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ca051b1b-5101-4ec2-ac1c-49699303188d

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Assessment Requirements for SIRXMKT002 Use social media to engage customers

Modification History

Not applicable.

Performance Evidence

Evidence of the ability to complete tasks outlined in elements and performance criteria of this unit in the context of the job role, and:

- research four social media platforms and select two platforms for use, appropriate to business needs and target customer
- use the above two social media platforms to engage the customer by:
  - curating and posting written and visual content appropriate to the target customer
  - promote one organisational marketing activity
  - respond to two of the following types of customer social media posts:
    - customer reviews
    - user generated content
    - questions
    - complaints
    - troll
- review effectiveness of social media platform across a one month period by:
  - reporting on social media activity
  - making at least one recommendation for continuous improvement of social media use.

Knowledge Evidence

Demonstrated knowledge required to complete the tasks outlined in elements and performance criteria of this unit:

- organisational policies and procedures for social media use
- rules and regulations and terms of use of specific social media platforms:
  - privacy
  - spamming
  - copyright
  - creative commons
- social media trends:
  - trending platforms
  - consumer behaviour
  - trending content

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- various social media platforms:
  - demographic of primary users
  - key features and uses
  - integration into business activity
  - useability
  - privacy and security features
  - costs
- legal and ethical practices for use of social media:
  - responsible use of platforms
  - responsible marketing practices
  - fair competition guidelines
  - duty of care
  - bullying and harassment policy
- types of social media users and their impacts:
  - troll
  - angry customer
  - misguided customer
  - unhappy customer
  - complimentary customers
  - brand advocates
- techniques for:
  - marketing the business using social media platforms:
    - promoting products
    - promoting special events
    - creating brand awareness
  - responding to customer posts on social media:
    - customer reviews
    - user generated content
    - questions
    - complaints
    - troll
- social media tools, and their use, for:
  - monitoring
  - scheduling social media content
  - capturing engagement and reach data
- commercial impact of social media platform both favourable and unfavourable:
  - importance of consumer reviews and user generated content
  - value of building a community of advocates on a social media platform
  - types of crisis issues or conflicts that can arise on social media locally, nationally and internationally

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- sources and types of social media content:
  - product information
  - images and photos
  - links to other websites
  - videos
  - text and graphics
  - current trends
  - Internet.

Assessment Conditions

Skills must be demonstrated in:

- an industry workplace
- a simulated industry environment.

Assessment must ensure access to:

- relevant documentation:
  - organisational policies and procedures for social media use
  - legal and ethical use of social media
- social media content calendar that details:
  - key events and promotions
  - milestones and relevant dates
  - content for release
- files for use across social media platforms:
  - image files
  - text files
  - PDF files
  - audio files
  - video files
  - link associated files
- computer or mobile device with Internet access
- social media monitoring tools
- social media platforms
- customer postings on social media platforms
- assessment activities that allow the individual to work with commercial speed, timing and productivity.

Assessors must satisfy the Standards for Registered Training Organisations' requirements for assessors.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ca051b1b-5101-4ec2-ac1c-49699303188d

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TLID2010 Operate a forklift

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Application

This unit involves the skills and knowledge required to operate a forklift in compliance with the relevant state/territory authority licence requirements and regulations, in a variety of operational contexts.

It includes checking forklift condition, driving forklift to fulfil operational requirements, and monitoring and maintaining forklift performance and site conditions.

Assessment of this unit will usually be undertaken within a licensing examination conducted by, or under the authority of, the relevant state/territory work health and safety (WHS)/occupational health and safety (OHS) authority.

Operation of a forklift is performed under some supervision, generally within a team environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

D – Load Handling

Unit Sector

Not applicable.

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Elements and Performance Criteria

Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Check forklift condition	1.1 Condition of forklift is checked for compliance with WHS/OHS and workplace requirements for warning devices, manufacturer specifications and nature of load shifting task
	1.2 Attachments are checked to ensure appropriate adjustment and operation
	1.3 Mirrors and seats are adjusted for safe operation by driver
	1.4 Logbooks are checked and appropriate workplace documentation is completed in accordance with workplace requirements
2 Drive forklift	2.1 Forklift is started, steered, manoeuvred, positioned and stopped in accordance with regulations and manufacturer instructions
	2.2 Engine power is managed to ensure efficiency and performance and to minimise engine and gear damage
	2.3 Operational hazards are identified and/or anticipated and avoided or controlled through defensive driving and appropriate hazard control techniques
	2.4 Forklift is driven in reverse, maintaining visibility and achieving accurate positioning
	2.5 Forklift is parked, shut down and secured in accordance with manufacturer specifications, regulations and workplace procedures
3 Operate forklift to handle loads	3.1 Lifting task to be undertaken is appropriately planned, and correct lifting truck and attachments are selected
	3.2 Load is lifted, carried, lowered and set down in accordance with WHS/OHS legislation, manufacturer specifications and company procedures
4 Monitor site conditions	4.1 Hazards and traffic flow are identified when selecting the most efficient route and appropriate adjustments are made
	4.2 Site conditions are assessed to enable safe operations and to ensure no injury to people or damage to property, equipment, loads or facilities occurs

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5 Monitor and maintain forklift performance	5.1 Performance and efficiency of vehicle operation is monitored during use
	5.2 Defective/irregular performance and malfunctions are reported to relevant personnel
	5.3 Forklift records are maintained/updated in accordance with workplace procedures and legislative requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions can be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to TLID2010A Operate a forklift.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

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Assessment Requirements for TLID2010 Operate a forklift

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- applying precautions and required action to minimise, control or eliminate identified hazards
- applying relevant legislation and workplace procedures
- checking and replenishing fluids, and carrying out lubrication processes
- communicating and working effectively with others
- completing relevant documentation
- ensuring forklift and its equipment are maintained in terms of service schedule and standard operating procedures
- identifying points of balance and safe lifting positions on a range of loads when operating a forklift (including accessories)
- modifying activities depending on operational contingencies, risk situations and environments
- monitoring performance of forklift and its equipment, and taking appropriate action as required
- monitoring and prioritising work activities in terms of planned schedule
- operating and adapting to differences in equipment in accordance with standard operating procedures
- operating electronic communications equipment to required protocol
- reading, interpreting and following relevant instructions, procedures, information and signs
- reporting and/or rectifying identified problems, faults or malfunctions promptly, in accordance with regulatory requirements and workplace procedures
- selecting and using required personal protective equipment conforming to industry and WHS/OHS standards
- working systematically with required attention to detail without injury to self or others, or damage to goods or equipment.

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Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- efficient driving techniques
- engine power management and safe operating strategies
- forklift controls, instruments and indicators, and their use
- forklift handling procedures
- high risk work licence requirements
- operating hazards and related defensive driving and hazard control techniques
- operational emergency procedures
- pre-operational checks carried out on forklift and related action
- principles of stress management when driving a forklift
- relevant duty of care requirements for operating a forklift
- relevant WHS/OHS and environmental procedures and regulations
- site layout and obstacles
- workplace operating procedures.

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the *Standards for Registered Training Organisations* current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the *Standards for Registered Training Organisations* current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment include:

- a range of relevant exercises, case studies and/or simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, regulations, codes of practice and operation manuals.

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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

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UETTDREL14A Working safely near live electrical apparatus as a non-electrical worker

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor

1) Scope:

1.1) Descriptor

This Competency Standard Unit covers compliance with working safely up to the defined "safe approach distance" near energised electrical apparatus (inc. electrical powerlines) for non-electrical workers. It includes work functions that may be performed, such as vegetation control, scaffolding, rigging, painting, and/or any other activity that requires working safely and complying with requirements and/or established procedures near live electrical apparatus by a non-electrical worker. Also included is the preparation of risk assessment control measures that encompass job safety assessment. It does not include any work that is or may be performed by other competent operatives within the defined "safe working zone". The defined "safe working zone" is that so defined by relevant State or Territory regulatory agencies/bodies, local government legislation, Industry bi-partite body – Guidelines/Codes of Practices or other related requirements for Safe work and access near live Electrical and Mechanical Apparatus.

Application of the Unit

Application of the Unit

2)

This competency standards unit shall apply to Transmission, Distribution, Rail Traction, Telecommunications and Vegetation Management Control industry sectors.

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Licensing/Regulatory Information

License to practice **3)**

The skills and knowledge described in this unit may require a licence/registration to practice in the work place subject to regulations for undertaking of electrical work. Practice in workplace and during training is also subject to regulations directly related to Occupational Health and Safety, electricity/telecommunications/gas/water industry safety and compliance, industrial relations, environmental protection, anti discrimination and training. Commonwealth, State/Territory or Local Government legislation and regulations may exist that limits the age of operating certain equipment.

Pre-Requisites

Prerequisite Unit(s) **4)**

Competencies **4.1)**

Granting of competency in this unit shall be made only after competency in the following unit(s) has/have been confirmed.

Where pre-requisite pathways have been identified. All competencies in the Common Unit Group must be have been completed plus all the competencies in one (1) of the identified Pathway Unit Group(s):

There are no prerequisite competencies to this unit.

Literacy and numeracy skills **4.2)**

Participants are best equipped to achieve this unit if they have reading, writing and numeracy skills indicated by the following scales. Description of each scale is given in Volume 2, Part 3 “Literacy and Numeracy”.

Reading 3 Writing 3 Numeracy 3

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Employability Skills Information

Employability Skills **5)**

The required outcomes described in this unit of competency contain applicable facets of Employability Skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements.

Elements and Performance Criteria Pre-Content

6) Elements describe the essential outcomes of a competency standard unit

Performance Criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the Evidence Guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Prepare to work safely near live electrical apparatus as non-electrical worker	1.1 Instructions related to the work to be performed safely near live electrical apparatus as non-electrical worker are received and confirmed.
	1.2 Relevant requirements and established procedures to be followed and, relevant personnel to be communicated with for the work to be performed are identified.
	1.3 OHS policies and procedures to be followed for the work to be performed are received and confirmed.
	1.4 Suggestions to assist in meeting the safety requirements for working near live electrical apparatus as a non-electrical worker are made to others involved in the work.
	1.5 Hazards are identified, OHS risks assessed and control measures are prioritised, implemented and monitored including emergency exits kept

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ELEMENT	PERFORMANCE CRITERIA	
		clear according to established procedures.
	1.6	Scope of responsibility and process of relevant work permit(s) issue is identified, received and confirmed according to requirements and established procedures.
	1.7	Relevant responsibility associated with First Aid, Safety Observers and/or other related work safety procedures at the worksite are identified in accordance with requirements and established procedures to ensure safety measures are followed in the instance of an incident.
	1.8	Processes for identifying and reporting client issues to appropriate personnel in accordance with industry/acceptable /community standards are identified.
	1.9	Site and the work schedule to be prepared are confirmed according to given instructions for a quality outcome and to minimise risk and damage to property, commerce, stock and individuals in accordance and established procedures.
	1.10	Electricity infrastructure assets, related voltages and requirements for working safely near live electrical apparatus as non-electrical worker are identified.
	1.11	Safe approach distances including any zones thereof that may apply, as defined in industry guidelines, requirements and/or established procedures for the intended work are confirmed.
2 Carry out the work safely near live electrical apparatus as non-electrical worker.	2.1	OHS principles and practices to reduce the incidents of accidents are identified in accordance with given instructions, requirements and/or established procedures.
	2.2	Working safely and complying with all safety requirements for working near live electrical apparatus as a non-electrical worker are followed in accordance with given instructions and

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ELEMENT	PERFORMANCE CRITERIA	
		established routines/procedures.
	2.3	Processes for monitoring and reporting/referring hazards and OHS risks to the immediate authorised personnel for directions according to established procedures are followed.
	2.4	Non-routine events are referred to the immediate authorised personnel for directions according to established procedures.
	2.5	Unexpected events associated with working safely near live electrical apparatus as a non-electrical worker are responded to using acquired known solutions and skills related to routine procedures to ensure work instructions and established procedures are met.
3 Complete the work safely near live electrical apparatus as non-electrical worker.	3.1	Work schedule and anomalies for completion and checking of the work are reported to authorised personnel in accordance with established procedures.
	3.2	Processes for reporting to authorised personnel accidents and/or incidents are confirmed in accordance with established procedures.
	3.3	Requirements for returning work permit(s) and/or access authorisation permits are confirmed.
	3.4	Appropriate personnel are notified of work completion according to established procedures.
	3.5	Works completion records, report forms/data sheets are completed accurately in accordance with given instructions and established procedures.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

8) Essential Knowledge and Associated Skills (EKAS): This describes the essential

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REQUIRED SKILLS AND KNOWLEDGE

skills and knowledge and their level, required for this unit.

Evidence shall show that knowledge has been acquired of working safely near live electrical apparatus as non electrical worker.

All knowledge and skills detailed in this unit should be contextualised to current industry practices and technologies.

KS01-TEL14A Power Line Safety – Non Electrical Workers

Evidence shall show an understanding of power line safety – non electrical workers to an extent indicated by the following aspects:

T1 Basic electrical principles encompassing:

- Fundamental units - basic measurement of units
- Electrical characteristics of material: characteristics of solid materials, insulators; terms electrical charge, electrical current, electromagnetic forces
- Nature of electrical current and change - basic rules of electrical current flow
- Sources of Electricity: basic fundaments of alternating current, direct current and single EMF source (induction)
- A simple circuit - circuit protection devices used on the network, effects of an open circuit, a closed circuit and a short circuit and earthing – using the ground as a form of conductor to return current back to a source
- Resistance - relationship between voltage and current and resistance (Ohms Law)
- Effects of current - physiological effects and protection for physiological effects; basic principle by which electrical current can result in the production of heat, light and electromagnetic fields and typical effects of current.
- Three phase and single phase power systems: star delta configurations, three phase star connections, relationship between line and phase voltages, three phase 4 wire systems - purpose of the neutral
- Consequences of short circuits - arc flash, ESI Protection schemes
- Magnetism - magnetic field patterns, concepts of electromagnetism, effects of electromagnetism and magnetic fields around straight conductors
- Hazards encountered in an ESI environment - touch and step potentials, electric shock, fire, chemicals, falls, safe use of tools and equipment.

T2 Transmission, distribution and rail power systems encompassing:

- Relationship between the transmission, distribution and rail/tram system within an overall power system - different organisations responsible for generation, transmission, distribution and rail/tram and, how they correlate and their functions
- Characteristics of a transmission, a distribution and a rail system - principal components, typical voltage levels and methods of transmission and distribution including grid type transmission systems, radial, parallel and ring main feeders
- Relationship between an overhead and underground supply systems within an overall power system - advantages/disadvantages, applications.
- Single line drawings and layouts - drawings and layouts of transmission and distribution systems including, radial, parallel and ring main feeders and the HV

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REQUIRED SKILLS AND KNOWLEDGE

equipment associated with substations

T3 Fundamentals for working safely near live electrical apparatus for non-electrical worker encompassing:

- Standards, guidelines/codes of practice, State/Territory/local government legislation, supply authority regulations and or enterprise requirements including relevant certification and licensing, applicable to working safely up to the defined "safe working zone" near energised electrical apparatus (inc. electrical powerlines) for non-electrical worker
- Definitions of terminologies - 'safe working zone', 'risk assessment', 'safe approach distances zones', 'safe working distances',' work permits', access authorisation permits', 'Technical standards', 'isolation procedures' and compliance requirements'
- OHS policies and procedures for working safely - duties of a safety observer, permit to work systems and isolation procedures, safe application of different types of tools and equipment and operation of mobile plant and machinery (e.g. EWP) near live electrical apparatus
- Techniques and precautions in undertaking different work functions and working safely up to the defined "safe working zone" near energised electrical apparatus (inc. electrical powerlines) for non-electrical worker (work functions that may be performed include, vegetation control, scaffolding, rigging, painting, and/or any other activity that requires working safely near live electrical apparatus by a non-electrical worker)

Evidence Guide

EVIDENCE GUIDE

9) This provides essential advice for assessment of the competency standard unit and must be read in conjunction with the Performance Criteria and the range statement of the competency standard unit and the Training Package Assessment Guidelines.

The Evidence Guide forms an integral part of this Competency Standard Unit and shall be used in conjunction with all component parts of this unit and, performed in accordance with the Assessment Guidelines of this Training Package.

Overview of Assessment	**9.1)**
	Longitudinal competency development approaches to assessment, such as Profiling, require data to be reliably gathered in a form that can be consistently interpreted over time. This approach is best utilised in Apprenticeship programs and reduces assessment

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intervention. It is the Industry's preferred model for apprenticeships. However, where summative (or final) assessment is used it is to include the application of the competency in the normal work environment or, at a minimum, the application of the competency in a realistically simulated work environment. It is recognised that, in some circumstances, assessment in part or full can occur outside the workplace. However, it must be in accord with Industry and, Regulatory policy in this regard.

Methods chosen for a particular assessment will be influenced by various factors. These include the extent of the assessment, the most effective locations for the assessment activities to take place, access to physical resources, additional safety measures that may be required and the critical nature of the competencies being assessed.

The critical safety nature of working with electricity, electrical equipment, gas or any other hazardous substance/material carries risk in deeming a person competent. Hence, sources of evidence need to be 'rich' in nature so as to minimise error in judgment.

Activities associated with normal every day work have a bearing on the decision as to how much and how detailed the data gathered will contribute to its 'richness'. Some skills are more critical to safety and operational requirements while the same skills may be more or less frequently practiced. These points are raised for the assessors to consider when choosing an assessment method and developing assessment instruments. Sample assessment instruments are included for Assessors in the Assessment Guidelines of this Training Package.

Critical aspects of evidence required to demonstrate competency in this unit

9.2)

Before the critical aspects of evidence are considered all prerequisites shall be met.

Evidence for competence in this unit shall be considered holistically. Each element and associated Performance Criteria shall be demonstrated on at least two occasions in accordance with the "Assessment Guidelines – UET12". Evidence shall also comprise:

- A representative body of Performance Criteria demonstrated within the timeframes typically expected of the discipline,

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work function and industrial environment. In particular this shall incorporate evidence that shows a candidate is able to:

- Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures as specified in the Performance Criteria and range; and
- Apply sustainable energy principles and practices as specified in the Performance Criteria and range; and
- Demonstrate an understanding of the essential knowledge and associated skills as described in this unit to such an extent that the learner's performance outcome is reported in accordance with the preferred approach; namely a percentile graded result, where required by the regulated environment; and
- Demonstrate an appropriate level of employability skills; and
- Conduct work observing the relevant Anti Discrimination legislation, regulations, policies and workplace procedures; and

- Demonstrated performance across a representative range of contexts from the prescribed items below:

Range of tools/equipment/materials/procedures/workplaces/other variables		
Group No	**The minimum number of items on which skill is to be demonstrated**	**Item List**
A	All of the following:	Confirmation of the "safe working zone" for Safe work and access near live Electrical Apparatus Identification of the relevant technical standards. Acts, regulations and codes/guidelines Identification of established (Enterprise) procedures
B	All of the following:	Confirmation of the principles of electricity,

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		the three phase power system, electric shock and resuscitation, power system Recognition of aerial voltage systems Identification of Low Voltage Aerial Circuits Identification of High Voltage
C	All of the following:	Procedures in the event of an incident Events constituting an incident Procedures for responding to incidents Hazard and risk assessment procedure Conduct Work-site Hazard Assessment Confirmation of essential components of Hazard Assessment Checks Applying Hazard Identification in Electrical Work Confirmation of the Basic Safety Principles for Work on Electrical works Hazard Identification and Risk Assessment Hazard Control Risk Assessment and Management (JSAs) Control The Hierarchy of Controls including Evaluation, Worksite Hazard and Risk

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		Assessment Checklist, Pre-job Hazard Assessment Check (HAC) Items, Planned Inspection and Pre-Work Hazard Risk Assessment Form
D	All of the following:	Use of work permits and/or authorisation permits Sustainable energy principles and practices Possible affects of weather conditions on working near electrical apparatus as a non-electrical worker
E	At least one occasion	Dealing with an unplanned event by drawing on essential knowledge and associated skills to provide appropriate solutions incorporated in the holistic assessment with the above listed items.

Context of and specific resources for assessment **9.3)**

This unit should be assessed as it relates to normal work practice using procedures, information and resources typical of a workplace. This should include:

- OHS policy and work procedures and instructions.
- Suitable work environment, facilities, equipment and materials to safely undertake actual work near live electrical apparatus

In addition to the resources listed above, in context of and specific resources for assessment, evidence should show demonstrated

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competency working below ground, in limited spaces, with different structural/construction types and method and in a variety of environments.

Method of assessment

9.4)

This Competency Standard Unit shall be assessed by methods given in Volume 1, Part 3 “Assessment Guidelines”.

Note:

Competent performance with inherent safe working practices is expected in the Industry to which this Competency Standard Unit applies. This requires that the specified essential knowledge and associated skills are assessed in a structured environment which is primarily intended for learning/assessment and incorporates all necessary equipment and facilities for learners to develop and demonstrate the essential knowledge and associated skills described in this unit.

Concurrent assessment and relationship with other units

9.5)

For optimisation of training and assessment effort, competence in this unit is not recommended to be assessed concurrently with any other unit.

Range Statement

RANGE STATEMENT

10) This relates to the competency standard unit as a whole providing the range of contexts and conditions to which the Performance Criteria apply. It allows for different work environments and situations that will affect performance.

This Competency Standard Unit shall be demonstrated in relation to safe working so defined by relevant State or Territory regulatory agencies/bodies, local government legislation, Industry bi-partite body – Guidelines/Codes of Practices or other related requirements for Safe work and access near live Electrical Apparatus.

Work functions that may be performed, such as vegetation control, operation of cranes, elevating work platforms, excavators, concrete pumps etc, scaffolding,

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RANGE STATEMENT

rigging, painting, and/or any other activity that requires working safely and complying with requirements and/or established procedures near live electrical apparatus by a non-electrical worker/

Working safely up to the defined “safe working zone” near energised electrical apparatus (inc. electrical powerlines) for non-electrical worker including an understanding of risk assessment control measures that encompass job safety assessment but excluding any work that is or may be performed by other competent operatives within the defined “safe working zone”.

Safe use of plant, equipment and tools within electrical environments including but not limited by the electricity supply infrastructure assets, infrastructure constructions and excavations including an understanding of safe approach distances zones/Safe Working Clearance, work permit(s) and/or access authorisation permits, technical standards and Industry Guidelines, rural applications, road construction, pavements and effect of inclement weather

The following constants and variables included in the element/Performance Criteria in this unit are fully described in the Definitions Section 1 of this volume and form an integral part of the Range Statement of this unit:

- Appropriate and relevant persons
- Appropriate authorities
- Assessing risk
- Authorisation
- Drawings and specifications
- Emergency
- Established procedures
- Hazards
- Identifying hazards
- Legislation
- Notification
- OHS practices
- OHS issues
- Permits and/or permits to work
- Work clearance systems

Unit Sector(s)

Not applicable.

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Competency Field

Competency Field **11)**

Entry Level – Cross Discipline Units.

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ICT Information and Communications Technology

Modification History

Release Number	***Release Date***	***Comments***
Release 6.1	October 2020	SSO (Skills Service Organisation) upgrade. **Qualifications** Minor update to one ICT Information and Communications Technology Training Package version 6.0 qualification: • ICT30120 Certificate III in Information Technology Minor update to three ICT Information and Communications Technology Training Package version 6.0 qualifications: • ICT40120 Certificate IV in Information Technology • ICT50120 Diploma of Information Technology • ICT60120 Diploma of Information Technology **Skill sets** Two new skill sets were created: • ICTSS00108 Digital Skills in Small Business Skill Set • ICTSS00109 Entry to Tech Skill Set Minor update to one ICT Information and Communications Technology Training Package version 6.0 skill set: • ICTSS00099 Cloud Design and Configuration Skill Set **Units of competency** Minor update to six ICT Information and Communications Technology Training Package version 6.0 units of competency: • ICTCYS406 Respond to cyber security incidents • ICTCYS601 Create cyber security standards for organisations • ICTICT216 Design and create basic organisational documents • ICTNWK544 Design and implement a security perimeter for ICT networks • ICTPRG549 Apply intermediate object-oriented language skills

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		ICTSAS210 Update and maintain hardware, software and documentation.
Release 6.0	July 2020	AISC endorsement of the following ICT components. **Qualifications** 4 qualifications: • ICT30120 Certificate III in Information Technology • ICT40120 Certificate IV in Information Technology • ICT50120 Diploma of Information Technology • ICT60120 Advanced Diploma of Information Technology were updated and supersede the following 24 qualifications from the ICT Information and Communications Training Package Version 5.1 and are not equivalent to their previous versions: • ICT30118 Certificate III in Information, Digital Media and Technology • ICT40118 Certificate IV in Information Technology • ICT40215 Certificate IV in Information Technology Support • ICT40315 Certificate IV in Web-Based Technologies • ICT40418 Certificate IV in Information Technology Networking • ICT40518 Certificate IV in Programming • ICT40815 Certificate IV in Digital Media Technologies • ICT40915 Certificate IV in Digital and Interactive Games • ICT41015 Certificate IV in Computer Systems Technology • ICT50118 Diploma of Information Technology • ICT50215 Diploma of Digital and Interactive Games • ICT50318 Diploma of Information Technology Systems Administration • ICT50418 Diploma of Information Technology Networking • ICT50515 Diploma of Database Design and Development • ICT50615 Diploma of Website Development • ICT50718 Diploma of Software Development • ICT50818 Diploma of Systems Analysis and Design • ICT50915 Diploma of Digital Media Technologies • ICT60115 Advanced Diploma of Information Technology • ICT60215 Advanced Diploma of Network Security • ICT60315 Advanced Diploma of Information Technology Business Analysis • ICT60415 Advanced Diploma of Information Technology Project Management • ICT60515 Advanced Diploma of Computer Systems Technology • ICT80115 Graduate Certificate in Information Technology and

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		Strategic Management **Skill sets** 9 skill sets were newly created from the ICT Information and Communications Training Package Version 5.1: • ICTSS00099 Cloud Design and Configuration Skill Set • ICTSS00100 Cloud Implementation and Maintenance Skill Set • ICTSS00101 Cyber Incident Response Skill Set • ICTSS00102 Cyber Incident Threat Detection and Prevention Skill Set • ICTSS00103 Cyber Security Strategy and Governance Skill Set • ICTSS00104 Data Analysis Skill Set • ICTSS00105 Internet of Things Developer Skill Set • ICTSS00106 Introductory Tools and Applications Skill Set • ICTSS00107 Introductory Help Desk Skill Set 2 skill sets were deleted from the ICT Information and Communications Training Package Version 5.1: • ICTSS00033 Basic Computer Hardware and System Troubleshooting Skill Set • ICTSS00045 Computing Fundamentals Skill Set **Units of competency** 53 new units of competency were newly created for this ICT Information and Communications Training Package Version 6.0: • ICTCLD401 Configure cloud services • ICTCLD501 Develop cloud disaster recovery plans • ICTCLD502 Design and implement highly-available cloud infrastructure • ICTCLD503 Implement web-scale cloud infrastructure • ICTCLD504 Improve cloud-based infrastructure • ICTCLD505 Implement cloud infrastructure with code • ICTCLD506 Implement virtual network in cloud environments • ICTCLD507 Build and deploy resources on cloud platforms • ICTCLD508 Manage infrastructure in cloud environments • ICTCYS401 Design and implement network security infrastructure for an organisation • ICTCYS402 Identify and confirm cyber security incidents • ICTCYS403 Plan and implement information security strategies for an organisation

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		• ICTCYS404 Run vulnerability test assessments for an organisation • ICTCYS405 Develop cyber security incident response plans • ICTCYS406 Respond to cyber security incidents • ICTCYS407 Gather, analyse and interpret threat data • ICTCYS601 Create cyber security standards for organisations • ICTCYS602 Implement cyber security operations • ICTCYS603 Undertake penetration testing for organisations • ICTCYS604 Implement best practices for identity management • ICTCYS606 Evaluate an organisation's compliance with relevant cyber security standards and law • ICTCYS607 Acquire digital forensic data • ICTCYS608 Perform cyber security risk assessments • ICTCYS609 Evaluate threats and vulnerabilities of IoT devices • ICTCYS610 Protect critical infrastructure for organisations • ICTCYS611 Configure security devices for organisations • ICTCYS612 Design and implement virtualised cyber security infrastructure for organisations • ICTCYS613 Utilise design methodologies for security architecture • ICTDAT401 Evaluate organisational compliance with data ethics legislation • ICTDAT402 Clean and verify data • ICTDAT501 Gather, analyse and verify data from different source inputs • ICTDAT502 Conduct significance tests • ICTDAT503 Use unsupervised learning for clustering • ICTICT313 Identify IP, ethics and privacy policies in ICT environments • ICTICT447 Work effectively in agile environments • ICTICT448 Prepare electronic portfolios of work • ICTICT449 Use version control systems in development environments • ICTICT450 Identify and use applications for distributed ledgers • ICTICT451 Comply with IP, ethics and privacy policies in ICT environments • ICTICT527 Develop and maintain blockchain solutions • ICTICT528 Deploy smart contracts • ICTICT529 Organise and lead agile projects • ICTICT530 Design user experience solutions • ICTIOT501 Install IT devices and networks • ICTIOT502 Program IoT devices • ICTIOT503 Design and test IoT devices and networks • ICTPMG301 Contribute as part of an IT project management team

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		• ICTPRG553 Create and develop REST APIs • ICTPRG554 Manage data persistence using noSQL data stores • ICTPRG555 Implement object relational mapping framework for data persistence • ICTPRG556 Implement and use a model view controller framework • ICTSAD612 Implement and maintain uses of containerisation • ICTSAD613 Install and configure container orchestration services 7 non-equivalent units of competency updated to align content with industry skills needs and standards: • ICTICT222 Research and share ICT solutions for Indigenous users • ICTICT440 Develop service level agreements • ICTICT532 Apply IP, ethics and privacy policies in ICT environments • ICTSAS434 Action change requests and present updated ICT system to clients • ICTTEN434 Install, configure and test internet protocol networks • ICTWEB306 Develop web presence using social media • ICTWEB444 Create responsive website layouts 255 equivalent units of competency updated to align content with industry skills needs and standards: • ICTCLD301 Evaluate characteristics of cloud computing solutions and services • ICTCLD601 Develop cloud computing strategies for businesses • ICTCLD602 Manage information security compliance of cloud service deployment • ICTDBS416 Create basic relational databases • ICTDBS417 Identify and resolve common database performance problems • ICTDBS418 Monitor and administer databases • ICTDBS505 Monitor and improve knowledge management systems • ICTDBS506 Design databases • ICTDBS507 Integrate databases with websites • ICTDBS604 Build data warehouses • ICTDBS605 Develop knowledge management strategies • ICTDBS606 Determine database functionality and scalability • ICTDMT404 Create visual design components for digital media • ICTDMT405 Produce interactive animations

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		• ICTDMT406 Produce and edit digital images • ICTGAM420 Produce interactive games • ICTGAM421 Identify and apply games design and game play principles • ICTGAM422 Create design documents for interactive games • ICTGAM423 Apply artificial intelligence in game development • ICTGAM424 Develop story and content in digital games • ICTGAM425 Create visual design components in interactive games • ICTGAM426 Write scripts for interactive games • ICTGAM427 Use 3-D software interface and toolsets • ICTGAM428 Create 3-D characters for interactive games • ICTGAM429 Develop 3-D components for interactive games • ICTGAM430 Design interactive media • ICTGAM431 Design and create 3-D digital models • ICTGAM432 Create audio for digital games • ICTGAM433 Prepare and complete image rendering processes • ICTGAM532 Create design concepts for digital games and 3-D media • ICTGAM533 Create complex 3-D interactive games • ICTGAM534 Manage interactive media productions • ICTGAM535 Develop complex 3-D software for games and interactive media • ICTGAM536 Design interactive 3-D applications for scientific and mathematical modelling • ICTGAM537 Prepare games for different platforms and delivery modes • ICTGAM538 Manage testing of games and interactive media • ICTGAM539 Create and implement designs for 3-D games environments • ICTGAM540 Design and create models for 3-D and digital effects environments • ICTGAM541 Design and create advanced particles, fluids and bodies for 3-D digital effects • ICTGAM542 Animate 3-D characters for digital games • ICTGAM543 Produce digital animation sequences • ICTGAM544 Animate physical attributes of models and elements • ICTGAM545 Manage technical art and rigging in 3-D animations • ICTGAM546 Create and combine 3-D digital games and components • ICTGAM547 Create interactive 3-D environments for digital games • ICTGAM548 Complete digital editing for 3-D and digital effects

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		environments • ICTGAM549 Collaborate in design of 3-D game levels and environments • ICTGAM550 Integrate multiple data sources into interactive 3-D environments • ICTGAM551 Apply digital texturing for the 3-D environment in digital games • ICTGAM552 Create complex 3-D characters for games • ICTGAM553 Integrate databases with online games • ICTGAM554 Create games for mobile devices • ICTGAM555 Analyse business opportunities in the digital games environments • ICTGAM556 Develop and implement physics in 3-D digital games • ICTGAM557 Complete compositing to create elements for 3-D and digital effects environments • ICTICT213 Use computer operating systems and hardware • ICTICT214 Operate application software package • ICTICT216 Design and create basic organisational documents • ICTICT219 Interact and resolve queries with ICT clients • ICTICT221 Identify and use specific industry standard technologies • ICTICT309 Create ICT user documentation • ICTICT310 Identify and use industry specific technologies • ICTICT311 Customise packaged software applications • ICTICT312 Use advanced features of applications • ICTICT429 Determine and confirm client business requirements • ICTICT430 Apply software development methodologies • ICTICT431 Use online tools for learning • ICTICT432 Develop detailed technical design • ICTICT433 Build graphical user interfaces • ICTICT434 Maintain website information standards • ICTICT435 Create technical documentation • ICTICT436 Develop macros and templates for clients using standard products • ICTICT437 Conduct post-implementation ICT system reviews • ICTICT438 Select, configure and deploy software and hardware testing tools • ICTICT441 Provide one-to-one instruction • ICTICT443 Work effectively in the ICT industry • ICTICT444 Develop client user interface • ICTICT445 Connect and configure devices and hardware components

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		• ICTICT446 Apply ICT service management principles • ICTICT518 Research and review hardware technology options for organisations • ICTICT520 Confirm transition strategy for a new system • ICTICT521 Select new technology supported business model • ICTICT522 Evaluate vendor products and equipment • ICTICT523 Gather data to identify business requirements • ICTICT524 Determine ICT strategies and solutions for organisations • ICTICT525 Identify and manage the implementation of industry specific technologies • ICTICT526 Verify client business requirements • ICTICT611 Develop ICT strategic business plans • ICTICT612 Develop contracts and manage contract performance • ICTICT613 Manage the use of development methodologies • ICTICT614 Identify and implement business innovation • ICTICT615 Implement knowledge management strategies • ICTICT616 Develop communities of practice • ICTICT617 Lead the evaluation and implementation of current industry specific technologies • ICTICT618 Manage IP, ethics and privacy in ICT environments • ICTNWK307 Provide network systems administration • ICTNWK308 Determine and action network problems • ICTNWK309 Configure and administer network operating systems • ICTNWK310 Administer network peripherals • ICTNWK311 Install and test network protocols • ICTNWK422 Install and manage servers • ICTNWK424 Install and operate small enterprise branch networks • ICTNWK425 Build small wireless local area networks • ICTNWK426 Install and configure client-server applications and services • ICTNWK427 Configure desktop environments • ICTNWK428 Create scripts for networking • ICTNWK429 Install hardware to networks • ICTNWK430 Deploy software to networked computers • ICTNWK431 Create network documentation • ICTNWK432 Build an enterprise wireless network • ICTNWK433 Install backbone technologies in a local area network • ICTNWK434 Identify and implement industry standard virtualisation technologies • ICTNWK537 Implement secure encryption technologies

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		• ICTNWK538 Install and maintain valid authentication processes • ICTNWK539 Design and implement integrated server solutions • ICTNWK541 Configure, verify and troubleshoot WAN links and IP services • ICTNWK542 Install, operate and troubleshoot medium enterprise routers • ICTNWK543 Install, operate and troubleshoot medium enterprise switches • ICTNWK544 Design and implement a security perimeter for ICT networks • ICTNWK545 Develop, implement and evaluate systems and applications security • ICTNWK547 Manage system security on operational systems • ICTNWK548 Model preferred system solutions • ICTNWK549 Design ICT security frameworks • ICTNWK550 Design ICT system security controls • ICTNWK551 Build decks using wireless markup language • ICTNWK552 Install and configure network access storage devices • ICTNWK553 Configure enterprise virtual computing environments • ICTNWK554 Manage enterprise virtual computing environments • ICTNWK556 Identify and resolve network problems • ICTNWK557 Configure and manage advanced virtual computing environments • ICTNWK558 Monitor and troubleshoot virtual computing environments • ICTNWK559 Install an enterprise virtual computing environment • ICTNWK618 Design and implement a security system • ICTNWK619 Plan, configure and test advanced server-based security • ICTNWK620 Design and implement wireless network security • ICTNWK621 Configure network devices for a secure network infrastructure • ICTNWK622 Configure and manage intrusion prevention system on network sensors • ICTNWK623 Manage ICT security • ICTPMG411 Support small scale ICT projects • ICTPMG612 Manage ICT project initiation • ICTPMG614 Manage ICT project delivery • ICTPMG615 Manage ICT project closure • ICTPMG616 Manage ICT project systems implementation • ICTPMG617 Plan and direct complex ICT projects • ICTPRG302 Apply introductory programming techniques

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		• ICTPRG429 Maintain open-source code programs • ICTPRG431 Apply query language in relational databases • ICTPRG432 Develop data-driven applications • ICTPRG433 Test software developments • ICTPRG434 Automate processes • ICTPRG435 Write scripts for software applications • ICTPRG436 Develop mobile applications • ICTPRG437 Build a user interface • ICTPRG438 Configure and maintain databases • ICTPRG439 Use pre-existing components • ICTPRG440 Apply introductory programming skills in different languages • ICTPRG441 Apply skills in object-oriented design • ICTPRG442 Apply mathematical techniques for software development • ICTPRG443 Apply intermediate programming skills in different languages • ICTPRG444 Analyse software requirements • ICTPRG446 Prepare software development review • ICTPRG447 Use extensible markup language • ICTPRG530 Manage projects using software management tools • ICTPRG533 Debug and monitor applications • ICTPRG534 Deploy applications to production environments • ICTPRG535 Build advanced user interfaces • ICTPRG536 Design application architecture • ICTPRG537 Implement security for applications • ICTPRG538 Create mashups • ICTPRG540 Maintain custom software • ICTPRG541 Monitor and support data conversion to new ICT systems • ICTPRG542 Review developed software • ICTPRG543 Develop integration blueprint for ICT systems • ICTPRG544 Install, test and evaluate pilot version of ICT systems • ICTPRG545 Monitor system pilots • ICTPRG546 Validate application designs against specifications • ICTPRG547 Apply advanced programming skills in another language • ICTPRG548 Develop high-level object-oriented class specifications • ICTPRG549 Apply intermediate object-oriented language skills • ICTPRG550 Perform ICT data conversions • ICTPRG551 Apply testing techniques for software development • ICTPRG603 Develop advanced mobile multi-touch applications

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		• ICTPRG614 Create cloud computing services • ICTSAD402 Develop and present ICT feasibility reports • ICTSAD507 Design and implement quality assurance processes for business solutions • ICTSAD508 Develop technical requirements for business solutions • ICTSAD509 Produce ICT feasibility reports • ICTSAD608 Perform ICT-focused enterprise analysis • ICTSAD609 Plan and monitor business analysis activities in an ICT environment • ICTSAD610 Analyse stakeholder requirements • ICTSAD611 Manage assessment and validation of ICT solutions • ICTSAS210 Update and maintain hardware, software and documentation inventories • ICTSAS211 Develop solutions for basic ICT malfunctions and problems • ICTSAS212 Record the requirements of client support requests • ICTSAS213 Maintain ICT system integrity • ICTSAS214 Protect devices from spam and destructive software • ICTSAS215 Protect and secure information assets • ICTSAS216 Maintain ICT equipment and replace consumables • ICTSAS217 Connect a home based local wireless network • ICTSAS309 Maintain and repair ICT equipment and software • ICTSAS310 Install, configure and secure a small office or home office network • ICTSAS428 Hand over ICT system components to clients • ICTSAS432 Identify and resolve client ICT problems • ICTSAS433 Update ICT client support procedures and assist with policy development • ICTSAS435 Resolve system faults on a live system • ICTSAS436 Evaluate ICT system status • ICTSAS437 Optimise ICT system performance • ICTSAS438 Implement maintenance procedures • ICTSAS439 Analyse ICT system capacity and implement enhancements • ICTSAS440 Monitor and administer security of ICT systems • ICTSAS441 Support ICT system software • ICTSAS442 Provide first-level remote help desk support • ICTSAS443 Support operating system users and troubleshoot applications • ICTSAS444 Repair operating systems boot up procedures • ICTSAS445 Configure and troubleshoot operating system software

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		• ICTSAS446 Fault find and troubleshoot ICT equipment, hardware and software problems • ICTSAS524 Develop, implement and evaluate an incident response plan • ICTSAS526 Review and update disaster recovery and contingency plans • ICTSAS528 Review and develop ICT maintenance strategy • ICTSAS529 Prioritise ICT change requests • ICTWEB304 Build simple web pages • ICTWEB305 Produce digital images for the web • ICTWEB432 Design website layouts • ICTWEB433 Confirm accessibility of websites • ICTWEB434 Transfer content to websites • ICTWEB435 Maintain website performance • ICTWEB436 Monitor traffic and compile website traffic reports • ICTWEB437 Create website testing procedures • ICTWEB438 Conduct operational acceptance tests of websites • ICTWEB439 Confirm basic website security • ICTWEB440 Use web authoring tools • ICTWEB441 Produce basic client-side script • ICTWEB442 Produce interactive web animation • ICTWEB443 Implement search engine optimisations • ICTWEB445 Implement content management systems • ICTWEB446 Integrate social web technologies • ICTWEB447 Build basic website using development software and ICT tools • ICTWEB448 Confirm website content meets technical protocols and standards • ICTWEB449 Confirm website access and useability • ICTWEB450 Evaluate and select a web hosting service • ICTWEB451 Apply structured query language in relational databases • ICTWEB452 Create a markup language document • ICTWEB513 Build dynamic websites • ICTWEB514 Create dynamic web pages • ICTWEB517 Create web-based programs • ICTWEB518 Build a document using extensible markup language • ICTWEB519 Develop complex web page layouts • ICTWEB520 Develop complex cascading style sheets • ICTWEB521 Customise complex ICT content management systems • ICTWEB522 Develop website information architecture • ICTWEB523 Manage transactions using site server tools

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		• ICTWEB524 Analyse information and assign meta tags • ICTWEB525 Implement quality assurance process for websites • ICTWEB526 Implement and use web services • ICTWEB527 Research and apply emerging web technology trends 12 units of competency: • ICTGAM535 Develop complex 3-D software for games and interactive media • ICTICT519 Develop detailed component specifications from project specifications • ICTNWK423 Manage network and data integrity • ICTNWK540 Design, build and test network servers • ICTNWK546 Manage network security • ICTPMG505 Manage ICT projects • ICTPMG613 Manage ICT project planning • ICTPRG605 Manage development of technical solutions from business specifications • ICTSAS525 Develop and conduct client acceptance test • ICTSAS527 Manage client problems • ICTSAS602 Implement change management processes • ICTWEB451 Apply structured query language in relational databases were updated and supersede 12 units of competency from the ICT Information and Communications Training Package Version 5.1 and are not equivalent to their previous versions: • ICTGAM507 Develop intermediate 3-D software for games and interactive media • ICTPMG504 Prepare project specifications • ICTPMG610 Develop a project management plan • ICTPMG802 Manage a telecommunications project • ICTPRG425 Use structured query language • ICTTEN501 Provide consultancy and technical support in the customer premises equipment sector • ICTTEN504 Acceptance test new systems and equipment • ICTTEN511 Administer a data communications network • ICTTEN514 Install, configure and test a server • ICTTEN516 Produce technical solutions from business specifications • ICTTEN605 Implement planned network changes with minimal impact to the customer • ICTTEN811 Evaluate and apply network security.

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		38 units of competency were deleted from the ICT Information and Communications Training Package Version 5.1: • ICTDBS408 Link an RFID system to a database • ICTGAM415 Develop simple environments for 3-D games • ICTGAM417 Apply digital effects to interactive products • ICTGAM506 Create complex code for mobile game devices • ICTICT402 Determine project specifications and secure client agreement • ICTICT412 Coordinate and maintain ICT work teams • ICTICT416 Contribute to the development of strategic plans • ICTICT512 Plan process re-engineering strategies for business • ICTICT802 Direct ICT services • ICTICT804 Direct ICT in a supply chain • ICTICT805 Direct ICT procurement • ICTICT806 Direct outsourced ICT services • ICTICT807 Direct research and business response to new ICT technology • ICTICT810 Synchronise ICT projects • ICTICT813 Manage ICT services • ICTNWK414 Create a common gateway interface script • ICTNWK521 Install, configure and test a payment gateway • ICTPMG601 Establish ICT project governance • ICTPMG606 Manage ICT project quality • ICTPMG607 Manage and control ICT project risks • ICTPRG416 Manage a software component re-use library • ICTPRG428 Use regular expressions in programming languages • ICTPRG512 Prepare for the build phase of an ICT system • ICTPRG513 Coordinate the build phase of an ICT system • ICTPRG525 Build Java applets • ICTPRG526 Maintain functionality of legacy code programs • ICTSAS402 Implement configuration management strategies • ICTSAS403 Review site environmental factors prior to ICT system implementation • ICTSAS404 Acquire ICT system components • ICTSAS407 Conduct pre-installation audit for software installation • ICTSAS408 Complete data transition in data migration process • ICTSAS409 Manage risks involving ICT systems and technology • ICTSAS507 Implement and evaluate systems for regulatory and standards compliance • ICTSUS802 Conduct a business case study for integrating

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		sustainability in ICT planning and design projects • ICTSUS803 Research strategies using SAP solutions for sustainable economic and environmental outcomes • ICTSUS808 Plan and manage virtualisation for ICT sustainability • ICTWEB419 Develop guidelines for uploading information to a website • ICTWEB512 Administer business websites and servers.
Release 5.1	January 2020	Minor updates to Companion Volume
Release 5.0	May 2019	**Qualifications** Six qualifications were updated from the ICT Information and Communications Technology Training Package Version 4.0 and supersede but are not equivalent to their previous versions: • ICT20219 Certificate II in Telecommunications Network Build and Operation supersedes ICT20215 Certificate II in Telecommunications Network Build and Operate and is deemed not equivalent (updated to increase core unit requirement from five to six and to decrease elective unit requirement from seven to six; remove two elective units of competency and insert four elective units of competency; modify title, packaging rules and groups.) • ICT20319 Certificate II in Telecommunications Technology supersedes ICT20315 Certificate II in Telecommunications Technology and is deemed not equivalent (updated to increase core unit requirement from six to seven and to decrease elective unit requirement from nine to six; insert one elective unit of competency; modify packaging rules and groups to introduce two specialisations.) • ICT30419 Certificate III in Telecommunications Network Build and Operation supersedes ICT30415 Certificate III in Telecommunications Network Build and Operate and is deemed not equivalent (updated to increase core unit requirement from five to six and to decrease elective core unit requirement from nine to eight; remove one elective unit of competency and insert 18 elective units of competency; modify title, packaging rules and groups.) • ICT30519 Certificate III in Telecommunications Technology supersedes ICT30515 Certificate III in Telecommunications Technology and is deemed not equivalent (updated to decrease core unit requirement from seven to six and to increase elective unit requirement from nine to ten; remove 12 elective units of competency and insert 27 elective units of competency; modify packaging rules and groups to introduce four specialisations.) • ICT41119 Certificate IV in Telecommunications Network Design supersedes ICT41115 Certificate IV in Telecommunications

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		Network Design and is deemed not equivalent (updated to decrease core unit requirement from eight to six and to increase elective unit requirement from eight to 10; remove one elective unit of competency and insert nine elective units of competency; modify packaging rules and groups and introduce qualification entry requirements.) • ICT41219 Certificate IV in Telecommunications Engineering Technology supersedes ICT41215 Certificate IV in Telecommunications Engineering Technology and is deemed not equivalent (updated to decrease core unit requirement from eight to five and increase the elective unit requirement from eight to 12; remove four elective units and insert ten elective units; modify packaging rules and groups to introduce one specialisation and introduce qualification entry requirements.) Two qualifications were deleted from the ICT Information and Communications Technology Training Package: • ICT30215 Certificate III in Telecommunications Digital Reception Technology • ICT30315 Certificate III in Telecommunications Rigging Installation. Three qualifications were updated as part of an SSO upgrade to reflect changed elective units: • ICT30118 Certificate III in Information, Digital Media and Technology • ICT40215 Certificate IV in Information Technology Support (equivalent and non-equivalent elective units updated) • ICT40418 Certificate IV in Information Technology Networking (non-equivalent elective unit updated). **Units of competency** 13 new units of competency were newly created for this ICT Information and Communications Technology Training Package Version 5.0: • ICTBWN306 Use radio frequency measuring instruments • ICTBWN307 Use optical measuring instruments • ICTCBL248 Install and terminate hard-line coaxial cable • ICTCBL331 Conduct basic identification and fault-finding within cabling networks and customer equipment • ICTCBL332 Locate, identify and rectify copper cable faults • ICTDRE308 Install a cable broadband multi-dwelling unit system

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		• ICTTEN210 Install underground telecommunications infrastructure
		• ICTTEN211 Work effectively in a telecommunications network environment
		• ICTTEN315 Determine and apply technologies within a telecommunications system
		• ICTTEN316 Conduct basic tests and analyses of telecommunications copper cabling
		• ICTTEN317 Locate, identify and rectify telecommunications network faults
		• ICTTEN435 Solve electrical-based telecommunications circuitry and cabling problems
		• ICTWOR308 Provide customer service to telecommunications customers.
		
		42 units of competency were updated from the ICT Information and Communications Technology Training Package Version 4.0:
		
		• 27 units supersede and are equivalent to their previous versions:
		  • ICTCBL239 Install customer cable support systems (recoded from ICTCBL201)
		  • ICTCBL240 Place and secure customer cable (recoded from ICTCBL202)
		  • ICTCBL241 Terminate metallic conductor customer cable recoded from ICTCBL203
		  • ICTCBL242 Install functional and protective telecommunications earthing system (recoded from ICTCBL204)
		  • ICTCBL246 Install, maintain and modify customer premises communications cabling: ACMA Restricted Rule (recoded from ICTCBL236)
		  • ICTCBL247 Install, maintain and modify customer premises communications cabling: ACMA Open Rule (recoded from ICTCBL237)
		  • ICTCBL252 Joint and terminate coaxial cable (recoded from ICTCBL209)
		  • ICTCBL253 Construct underground telecommunications infrastructure (recoded from ICTTCBL213)
		  • ICTCBL254 Joint metallic conductor cable in access network (recoded from ICTCBL215)
		  • ICTCBL324 Cut over new systems and equipment on customer premises (recoded from ICTCBL312)
		  • ICTCBL325 Maintain cable network (recoded from ICTCBL315)
		  • ICTCBL326 Cut over metallic conductor cable in the access network (recoded from ICTCBL317)

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		• ICTCBL334 Install underground enclosures and conduit (recoded from ICTCBL307) • ICTCBL335 Construct aerial cable supports (recoded from ICTCBL309 • ICTCBL336 Install and cut over metallic conductor cable to access network cabinet (recoded from ICTCBL318) • ICTCMP203 Perform restricted customer premises broadband cabling work: ACMA Restricted Rule (recoded from ICTCMP202) • ICTDRE314 Design communications wiring systems for customer premises (recoded from ICTDRE304) • ICTOPN405 Install and test a dense wavelength division multiplexing system (recoded from ICTOPN401) • ICTRFN407 Conduct radio frequency measurements (recoded from ICTRFN401) • ICTTEN312 Install telecommunications network equipment (recoded from ICTTEN302). • ICTTEN313 Work on and resolve recurrent network faults (recoded from ICTTEN303) • ICTTEN319 Recover customer premises equipment (recoded from ICTTEN304) • ICTTEN320 Commission an electronic unit (recoded from ICTTEN306) • ICTTEN321 Maintain an electronic system (recoded from ICTTEN308) • ICTTEN322 Provide infrastructure for telecommunications network customer equipment (recoded from ICTTEN309) • ICTTEN432 Identify requirements for customer telecommunications equipment (recoded from ICTTEN401). • ICTTEN433 Install configuration programs on PC based customer equipment (recoded from ICTTEN405) • 15 units supersede but are not equivalent to their previous versions: • ICTBWN308 Work safely on live optical fibre installations (recoded from ICTBWN304) • ICTBWN309 Perform tests on optical communication system and components (recoded from ICTBWN301) • ICTCBL249 Haul underground cable for installation and maintenance work (recoded from ICTCBL207) • ICTCBL250 Haul and fix aerial cable (recoded from ICTCBL214) • ICTCBL251 Install aerial and underground cable lead-ins (recoded from ICTCBL220) • ICTCBL322 Install, test and terminate optical fibre cable on

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		customer premises recoded from ICTCBL302) • ICTCBL323 Test cables and systems on customer premises (recoded from ICTCBL304) • ICTCBL329 Install underground cable for communications applications (recoded from ICTCBL308) • ICTCBL330 Splice and terminate optical fibre cable for telecommunications projects (recoded from ICTCBL208) • ICTCBL333 Install aerial cable for communications applications (recoded from ICTCBL310) • ICTOPN404 Test optical communications systems and components (recoded from ICTOPN402) • ICTTEN208 Use electrical skills when working with telecommunications networks (recoded from ICTTEN201) • ICTTEN318 Inspect, clean and handle optical fibre cable and connectors (recoded from ICTTEN311) • ICTWHS205 Work safely near power infrastructure at a telecommunications workplace (recoded from ICTWHS203) • ICTWOR202 Work effectively in the digital and telecommunications industry (recoded from ICTWOR201). Two units of competency were deleted from the ICT Information and Communications Technology Training Package Version 4.0: • ICTBWN305 Use optical and radio frequency measuring instruments • ICTTEN305 Refurbish customer premises equipment. Four new skill sets were newly created from the ICT Information and Communications Technology Training Package Version 4.0: • ICTSS00087 Basic Technician Network Build and Operate Skill Set • ICTSS00096 Technician Hybrid Fibre Coaxial Skill Set • ICTSS00097 Telecommunications Customer Service Technician HFC Technician Skill Set • ICTSS00098 Network Technician HFC Skill Set. Ten skill sets were updated and are deemed not equivalent to ICT Information and Communications Technology Training Package Version 4.0: • ICTSS00084 Basic Open Cabler Registration Skill Set supersedes ICTSS00062 Basic Open Cabler Registration Skill Set • ICTSS00085 Basic Restricted Cabler Registration Skill Set

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		supersedes ICTSS00063 Basic Restricted Cabler Registration Skill Set • ICTSS00088 Advanced Telecommunications Rigging Installation Skill Set supersedes ICTSS00060 Advanced Telecommunications Rigging Installation Skills Set • ICTSS00089 Basic Telecommunications Rigging Installation Skill Set supersedes ICTSS00064 Basic Telecommunications Rigging Installation Skill Set • ICTSS00090 Advanced IoT Installation Skill Set supersedes ICTSS00067 Convergent Technology Skill Set • ICTSS00091 Radio Technician Skill Set supersedes ICTSS00074 Radio Technician Skill Set • ICTSS00092 Technical Help Desk supersedes ICTSS00075 Technical Help Skill Set • ICTSS00093 Telecommunications Linesworker HFS Skill Set supersedes ICTSS00093 Telecommunications Linesworker Skill Set • ICTSS00094 Technician Fibre Skill Set supersedes ICTSS00081 Technician Fibre Skill Set • ICTSS00095 Fibre Splicer Skill Set supersedes ICTSS00082 Fibre Splicer Skill Set. Ten skill sets were updated to include unit code updates: • ICTSS00058 ACMA Advanced Cabler Registration Skill Set • ICTSS00065 Civil Works – Installation of Pit and Pipe and FDH Skill Set • ICTSS00066 Commercial Digital Television Antenna Systems Installation Skill Set • ICTSS00069 Domestic Digital Television Antenna Installation Skill Set • ICTSS00071 IP Convergence Installations for Home and SME Skill Set • ICTSS00076 Wireless LAN and IP Network Installation Skill Set • ICTSS00077 Telecommun8ications Linesworker Copper Skill Set • ICTSS00078 Telecommunications Linesworker Fibre Skill Set • ICTSS00080 Copper Cable Jointer Skill Set • ICTSS00083 Underground Installations Skill Set. Non-endorsable units of competency 21 units of competency were updated to fix minor typographical errors and are equivalent to ICT Information and Communications Technology Training Package Version 4.0:

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		• ICTCBL205 Joint metallic conductor cable on customer premises • ICTCBL206 Alter services to existing cable system • ICTCBL210 Install a telecommunications service to a building • ICTCBL238 Install, maintain and modify customer premises communications cabling: ACMA Lift Rule • ICTCBL301 Install, terminate and certify structured cabling installation • ICTCBL303 Install and terminate coaxial cable • ICTCBL305 Hand over cable systems and equipment • ICTCBL306 Locate and identify cable system faults • ICTCBL313 Modify and cutover cable • ICTCBL316 Install ribbon fibre cable in the FTTX distribution network • ICTCBL319 Rearrange large size copper cable • ICTDRE301 Install digital reception equipment • ICTDRE303 Install a complex digital reception system • ICTPMG201 Prepare site for support installation • ICTRFN406 Maintain hybrid fibre coaxial broadband cable network • ICTTEN202 Use hand and power tools • ICTTEN307 Repair and replace telecommunications network hardware • ICTWOR307 Collect and analyse technical information • ICTWHS204 Follow work health and safety and environmental policy and procedures • ICTSAS410 Identify and resolve client ICT problems • ICTPRG415 Apply skills in object-oriented design
Release 4.0	November 2018	**Qualifications** Nine qualifications were updated from the ICT Information and Communications Technology Training Package Version 3.1: • ICT30118 Certificate III in Information, Digital Media and Technology supersedes ICT30115 Certificate III in Information, Digital Media and Technology and is equivalent (updated to change one out of six core units of competency) • ICT40118 Certificate IV in Information Technology supersedes ICT40115 Certificate IV in Information Technology and is not equivalent (updated to change three core units of competency, remove four elective units of competency, insert 17 elective units of competency, and modify the packaging rules and groups) • ICT40418 Certificate IV in Information Technology Networking supersedes ICT40415 Certificate IV in Information Technology Networking and is equivalent (updated to change one out of eight core units of competency)

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		• ICT40518 Certificate IV in Programming supersedes ICT40515 Certificate IV in Programming and is equivalent (updated to change one out of ten core units of competency) • ICT50118 Diploma of Information Technology supersedes ICT50115 Diploma of Information Technology and is equivalent (updated to change one out of four core units of competency) • ICT50318 Diploma of Information Technology Systems Administration supersedes ICT50315 Diploma of Information Technology Systems Administration and is equivalent (updated to change one out of ten core units of competency) • ICT50418 Diploma of Information Technology Networking supersedes ICT50415 Diploma of Information Technology Networking and is equivalent (updated to change one out of five core units of competency) • ICT50718 Diploma of Software Development supersedes ICT50715 Diploma of Software Development and is equivalent (updated to change one out of ten core units of competency) • ICT50818 Diploma of Systems Analysis and Design supersedes ICT50815 Diploma of Systems Analysis and Design and is equivalent (updated to change one out of nine core units of competency). Three qualifications were deleted from the ICT Information and Communications Technology Training Package: • ICT40615 Certificate IV in Information Technology Testing • ICT40715 Certificate IV in Systems Analysis and Design • ICT80215 Graduate Certificate in Information Technology Sustainability. **Units of competency** Four units of competency were newly created: • ICTICT424 Address cyber security requirements • ICTICT425 Implement WHS, environmental sustainability and anti-discrimination practices in an ICT workplace • ICTICT426 Identify and evaluate emerging technologies and practices • ICTWEB431 Create and style simple markup language documents. 20 units of competency were updated from the ICT Information and Communications Technology Training Package version 3.1: • ICTDBS413 Determine database requirements (updated Title, Application, Elements, and Assessment Requirements to clarify intent) (recoded from ICTDBS401)

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		• ICTDBS414 Complete database backup and restore (updated Application, Elements, and Assessment Requirements to clarify intent) (recoded from ICTDBS402) • ICTDBS415 Build a database (updated Elements, and Assessment Requirements to clarify intent) (recoded from ICTDBS412) • ICTICT427 Identify, evaluate and apply current industry-specific technologies to meet organisational needs (updated Title, Application, Elements, and Assessment Requirements to clarify intent) (recoded from ICTICT417) • ICTICT428 Select cloud storage solutions (updated Title, Application and Element 1 to clarify intent and scope; integrated Element 3 into Element 2; and updated Foundation Skills to reflect unit content) (recoded from ICTICT423) • ICTICT517 Match ICT needs with the strategic direction of the organisation (updated Title, Application, Elements, and Assessment Requirements to clarify intent and scope) (recoded from ICTICT511) • ICTNWK420 Install and configure virtual machines (updated Assessment Requirements and typographical edit to title to clarify intent) (recoded from ICTNWK402) • ICTNWK421 Install, configure and test network security (updated Application, Elements and Assessment Requirements to clarify intent and scope; and updated Foundation Skills to reflect unit content) (recoded from ICTNWK406) • ICTNWK536 Plan, implement and test enterprise communication solutions (updated Application, Elements and Assessment Requirements to clarify intent and scope; and updated Foundation Skills to reflect unit content) (recoded from ICTNWK501) • ICTPRG430 Apply introductory object-oriented language skills (updated Elements, Foundation Skills and Assessment Requirements to clarify intent) (recoded from ICTPRG406) • ICTPRG531 Prepare for application development using current methods (updated Title, Application, Elements, and Assessment Requirements to modify intent and scope) (recoded from ICTPRG514) • ICTPRG532 Apply advanced object-oriented language skills (updated Elements and Assessment Requirements to clarify intent) (recoded from ICTPRG501) • ICTSAS308 Run standard diagnostic tests (updated Application, Elements and Assessment Requirements to clarify intent and scope) (recoded from ICTSAS301) • ICTSAS519 Perform systems tests (updated unit of competency to incorporate relevant content from ICTSAS401) (recoded from ICTSAS503) • ICTSAS520 Develop detailed test plans (updated unit of competency to reflect industry requirements) (recoded from

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		ICTSAS513) • ICTSAS521 Perform integration tests (updated unit of competency to reflect industry requirements) (recoded from ICTSAS514) • ICTSAS522 Manage the testing process (updated unit of competency to reflect industry requirements) (recoded from ICTSAS515) • ICTSAS523 Perform stress and load tests on integrated platforms (updated unit of competency to reflect industry requirements) (recoded from ICTSAS516) • ICTSUS808 Plan and manage virtualisation for ICT sustainability (updated unit of competency to reflect industry requirements) (recoded from ICTSUS801) • ICTWEB430 Produce server-side script for dynamic web pages (updated unit of competency to reflect industry requirements) (recoded from ICTWEB415). Six units of competency were deleted from the ICT Information and Communications Technology Training Package: • ICTSAS401 Perform unit test for a class • ICTSAS405 Identify and evaluate ICT industry vendor technologies • ICTSUS401 Install and test renewable energy system for ICT networks • ICTWEB301 Create a simple markup language document • ICTWEB409 Develop cascading style sheets ICTWEB420 Write content for web pages.
Release 3.1		SSO (Skills Service Organisation) upgrades to correct minor mapping errors. **Qualifications** Six qualifications were updated and equivalent to ICT Information and Communications Technology Training Package version 3: • ICT20215 Certificate II in Telecommunications Network Build and Operate (minor update to the specialist stream elective groups) • ICT30415 Certificate III in Telecommunications Network Build and Operate (packaging rules updated to require six electives, minor update to the specialist stream elective groups) • ICT40815 Certificate IV in Digital Media Technologies (updated to clarify packaging rules) • ICT40915 Certificate IV in Digital and Interactive Games

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		(updated to clarify packaging rules) • ICT80215 Graduate Certificate in Information Technology Sustainability (updated qualification description). Two qualifications were updated and equivalent to ICT Information and Communications Technology Training Package version 3 to reflect changes in unit of competency titles in this release: • ICT50415 Diploma of Information Technology Networking • ICT51015 Diploma of Telecommunications Engineering. **Skill sets** Seven new skill sets: • ICTSS00077 Telecommunications Linesworker Copper Skill Set • ICTSS00078 Telecommunications Linesworker Fibre Skill Set • ICTSS00079 Telecommunications Linesworker HFC Skill Set • ICTSS00080 Copper Cable Jointer Skill Set • ICTSS00081 Technician Fibre Skill Set • ICTSS00082 Fibre Splicer Skill Set • ICTSS00083 Underground Installations Skill Set. Three skill sets were removed: • ICTSS00070 Installing NBN Wireless and Infrastructure Skill Set • ICTSS00072 National Broadband Network Advanced Linesworker/Installer Skill Set • ICTSS00073 National Broadband Network Splicer Skill Set. **Units of competency** Six units of competency were updated and equivalent to ICT Information and Communications Technology Training Package version 3: • ICTCBL236 Install, maintain and modify customer premises communications cabling: ACMA Restricted Rule (updated to include the ACMA's assessment standards for persons seeking registration) • ICTCBL237 Install, maintain and modify customer premises communications cabling: ACMA Open Rule (updated to include the ACMA's assessment standards for persons seeking registration) • ICTNWK405 Build a small wireless local area network (updated to reinstate performance element from ICT Information and

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		Communications Technology version 2) • ICTTEN512 Design and implement an enterprise voice over internet protocol and a unified communications network (unit of competency title updated to correct typographical error) • ICTWHS204 Follow work health and safety and environmental policy and procedures (updated to correct typographical errors) ICTWOR307 Collect and analyse technical information (updated to correct typographical errors).
Release 3.0	January 2016	**Units of competency** Six new units of competency: • ICTCBL317 Cut over metallic conductor cable in the access network • ICTCBL318 Install and cut over metallic conductor cable to access network cabinet • ICTCBL319 Rearrange large size copper cable • ICTCBL320 Jumper metallic conductor cable in the access network • ICTTEN310 Remove and replace electronic circuit boards in carrier equipment • ICTTEN311 Inspect, clean and handle optical fibre cable and connectors. **Industry Skills Council upgrades** Unit code updates and/or modifications to elective banks in two qualifications: • ICT20215 Certificate II in Telecommunications Network Build and Operate ICT30415 Certificate III in Telecommunications Network Build and Operate.
Release 2.0	January 2016	Qualifications, skill sets and units from ICT10 Integrated Telecommunications Training Package were reviewed and updated to meet Standards for Training Packages and included in the ICT Information and Communications Technology Training Package version 2. **Qualifications** 12 qualifications: • ICT20215 Certificate II in Telecommunications Network Build and Operate • ICT20315 Certificate II in Telecommunications Technology

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		• ICT30215 Certificate III in Telecommunications Digital Reception Technology • ICT30315 Certificate III in Telecommunications Rigging Installation • ICT30415 Certificate III in Telecommunications Network Build and Operate • CT30515 Certificate III in Telecommunications Technology • ICT41115 Certificate IV in Telecommunications Network Design • ICT41215 Certificate IV in Telecommunications Engineering Technology • ICT51015 Diploma of Telecommunications Engineering • ICT51115 Diploma of Telecommunications Planning and Design • ICT60615 Advanced Diploma of Telecommunications Network Engineering • ICT80615 Graduate Certificate in Telecommunications Network Engineering. **Skill sets** 19 skill sets. **Units of competency** 239 units of competency were updated to meet the Standards for Training Packages. One new unit of competency: • ICTNWK617 Configure and manage a storage area network. **Industry Skills Council upgrades** Unit codes were corrected or updated in 26 qualifications from ICT Information and Communications Technology Training Package version 1. Unit codes were corrected or updated in 27 skill sets from ICT Information and Communications Technology Training Package version 1.
Release 1.0	March 2015	Primary release of restructured ICT Information Communications Technology Training Package. This release of ICT Information Communications Technology Training Package contains 32 qualifications, 27 skill sets and 417 native units of competency comprising 417 units updated to meet

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		Standards for Training Packages) and 106 imported units. • ICT80115 Graduate Certificate in Information Technology and Strategic Management (updated to meet AQF Requirements) • ICT80215 Graduate Certificate in Information Technology Sustainability (updated to meet AQF Requirements) • ICT80415 Graduate Diploma of Telecommunications Network Engineering (updated to meet AQF Requirements) • ICT80315 Graduate Certificate in Telecommunications – added ICT80515 Graduate Diploma of Telecommunications and Strategic Management – added.

Credit Arrangements

Credit Arrangements for ICT Information and Communications Technology Training Package Version 6.1	
At the time of endorsement of this Training Package no national credit arrangements exist for the ICT Information and Communications Technology Training Package.	
Links	Companion Volume Implementation Guide: https://vetnet.education.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

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ICTSS00031 Application Development Specialist Skill Set

Modification History

Release	Comments
Release 4	This version released with ICT Information and Communications Technology Training Package version 6.0. Release 4 created to reflect the updated units of competency.
Release 3	This version released with ICT Information and Communications Technology Training Package version 4.0. Release 3 created to update the new unit code of ICTPRG532.
Release 2	This version released with ICT Information and Communications Technology Training Package version 2.0 Release 2 created to update typographical error
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Description

This skill set has been designed for individuals who wish to meet competency requirements for working as applications programmers and software development specialists.

Pathways Information

This skill set provides credit towards ICT50718 Diploma of Software Development.

Licensing/Regulatory Information

Not applicable.

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Skill Set Requirements

ICTPRG532 Apply advanced object-oriented language skills

ICTPRG535 Build advanced user interfaces

ICTPRG536 Design application architecture

ICTPRG537 Implement security for applications

ICTPRG547 Apply advanced programming skills in another language

Target Group

This skill set is for persons who are able to work as application programmers and software developers.

Suggested words for Statement of Attainment

These units of competency from ICT Information and Communications Technology Training Package meet competency requirements for skills in working as a software development specialist.

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ICTSS00032 Basic Application Development Programmer Skill Set

Modification History

Release	Comments
Release 4	This version released with ICT Information and Communications Technology Training Package version 6.0. Release 4 created to reflect the updated units of competency.
Release 3	This version released with ICT Information and Communications Technology Training Package version 4.0. Release 3 created to update the new unit code of ICTPRG430.
Release 2	This version released with ICT Information and Communications Technology Training Package version 2.0 Release 2 created to update typographical error
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Description

This skill set has been designed for individuals who wish to meet competency requirements for working as basic applications programmers using a range of programming languages

Pathways Information

This skill set provides credit towards ICT40518 Certificate IV in Programming.

Licensing/Regulatory Information

Not applicable.

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Skill Set Requirements

ICTPRG430 Apply introductory object-oriented language skills

ICTPRG439 Use pre-existing components

ICTPRG440 Apply introductory programming skills in different languages

ICTPRG443 Apply intermediate programming skills in different languages

ICTPRG549 Apply intermediate object-oriented language skills

Target Group

This skill set is for persons who are able to work as basic application programmers.

Suggested words for Statement of Attainment

These units of competency from ICT Information and Communications Technology Training Package meet competency requirements for skills in working as a basic application programmer.

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ICTSS00034 Basic Web Development Specialist Skill Set

Modification History

Release	Comments
Release 3	This version released with ICT Information and Communications Technology Training Package version 6.0 Release 2 created to reflect the updated units of competency.
Release 2	This version released with ICT Information and Communications Technology Training Package version 2.0 Release 2 created to update typographical error.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Description

This skill set provides the requirements to meet competency requirements for skills in reviewing, developing and maintaining a simple websites.

Pathways Information

This skill set provides credit towards ICT30115 Certificate III in Information, Digital Media and Technology.

Licensing/Regulatory Information

Not applicable.

Skill Set Requirements

BSBEBU401 Review and maintain a website

ICTWEB304 Build simple web pages

ICTWEB434 Transfer content to websites

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Target Group

This skill set is for persons wanting to develop and maintain a basic website.

Suggested words for Statement of Attainment

These units of competency from ICT Information and Communications Technology and BSB Business Services Training Packages meet competency requirements for skills in developing and maintaining a simple website.

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ICTSS00035 Certified IT Network Enterprise, Security or Server Administrator Skill Set

Modification History

Release	Comments
Release 4	This version released with ICT Information and Communications Technology Training Package version 4.0. Release 4 created to reflect the updated units of competency.
Release 3	This version released with ICT Information and Communications Technology Training Package version 4.0. Release 3 created to update the new unit code of ICTNWK421.
Release 2	This version released with ICT Information and Communications Technology Training Package version 2.0 Release 2 created to update typographical error.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Description

This skill set has been designed for individuals who wish to meet competency requirements for the installation, configuration and administration of enterprise security systems, servers and networks.

Pathways Information

This skill set provides credit towards ICT40418 Certificate IV in Information Technology Networking.

Licensing/Regulatory Information

Not applicable.

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Skill Set Requirements

ICTNWK421 Install, configure and test network security

ICTNWK423 Manage network and data integrity

Target Group

This skill set is for persons who are able to work as certified IT enterprise, security or server administrators.

Suggested words for Statement of Attainment

These units of competency from ICT Information and Communications Technology Training Package meet competency requirements for skills in administering security, servers or enterprise networks.

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ICTSS00036 Certified Network Associate Technology Specialist Skill Set

Modification History

Release	Comments
Release 3	This version released with ICT Information and Communications Technology Training Package version 6.0 Release 2 created to reflect the updated units of competency.
Release 2	This version released with ICT Information and Communications Technology Training Package version 2.0 Release 2 created to update typographical error.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Description

This skill set has been designed for individuals who wish to meet competency requirements at an associate level for managing, troubleshooting networks, routers and switches.

Pathways Information

This skill set provides credit towards ICT50415 Diploma of Information Technology Networking.

Licensing/Regulatory Information

Not applicable.

Skill Set Requirements

ICTNWK529 Install and manage complex ICT networks

ICTNWK541 Configure, verify and troubleshoot WAN links and IP services

ICTNWK542 Install, operate and troubleshoot medium enterprise routers

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ICTNWK543 Install, operate and troubleshoot medium enterprise switches

Target Group

This skill set is for persons who are able to work as certified network associate technology specialists.

Suggested words for Statement of Attainment

These units of competency from ICT Information and Communications Technology Training Package meet competency requirements for associate level skills in networking.

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ICTSS00037 Certified Network Professional Specialist - Voice and Wireless Skill Set

Modification History

Release	Comments
Release 3	This version released with ICT Information and Communications Technology Training Package version 6.0 Release 3 created to reflect the updated units of competency.
Release 2	This version released with ICT Information and Communications Technology Training Package version 2.0 Release 2 created to update typographical error.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Description

This skill set has been designed for individuals who wish to meet competency requirements for skills in working as a network professional specialising in wireless and voice networks.

Pathways Information

This skill set provides credit towards ICT60215 Advanced Diploma of Network Security.

Licensing/Regulatory Information

Not applicable.

Skill Set Requirements

ICTNWK605 Design and configure secure integrated wireless systems

ICTNWK606 Implement voice applications over secure wireless networks

ICTNWK620 Design and implement wireless network security

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Target Group

This skill set is for persons who are able to work as certified network professional specialists – voice and wireless.

Suggested words for Statement of Attainment

These units of competency from ICT Information and Communications Technology Training Package meet competency requirements for skills in working as a network professional specialising in voice and wireless networks.

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ICTSS00038 Certified Network Professional Specialist Skill Set

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package version 2.0 Release 2 created to update typographical error
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Description

This skill set has been designed for individuals who wish to meet competency requirements for skills in working as a network specialist planning, configuring and troubleshooting network and internetwork solutions.

Pathways Information

This skill set provides credit towards ICT60215 Advanced Diploma of Network Security.

Licensing/Regulatory Information

Not applicable.

Skill Set Requirements

ICTNWK603 Plan, configure and test advanced internetwork routing solutions

ICTNWK604 Plan and configure advanced internetwork switching solutions

ICTNWK612 Plan and manage troubleshooting advanced integrated IP networks

Target Group

This skill set is for persons who are able to work as certified network professional specialists.

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Suggested words for Statement of Attainment

These units of competency from ICT Information and Communications Technology Training Package meet competency requirements for skills in working as a network professional.

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ICTSS00039 Certified Networking Technician Skill Set

Modification History

Release	Comments
Release 3	This version released with ICT Information and Communications Technology Training Package version 2.0 Release 3 created to reflect the updated units of competency.
Release 2	This version released with ICT Information and Communications Technology Training Package version 2.0 Release 2 created to update typographical error and update unit code.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Description

This skill set has been designed for individuals who wish to meet competency requirements for skills in working as a technician specialising in small enterprise networks, wireless and installation and configuration of networking solutions.

Pathways Information

This skill set provides credit towards ICT40415 Certificate IV in Information Technology Networking.

Licensing/Regulatory Information

Not applicable.

Skill Set Requirements

ICTNWK424 Install and operate small enterprise branch networks

ICTNWK425 Build small wireless local area networks

ICTTEN417 Install, configure and test a router

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Target Group

This skill set is for persons who are able to work as certified network technicians.

Suggested words for Statement of Attainment

These units of competency from ICT Information and Communications Technology Training Package meet competency requirements for technical skills in networks.

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ICTSS00040 Certified Security and Architect Specialist Skill Set

Modification History

Release	Comments
Release 3	This version released with ICT Information and Communications Technology Training Package version 6.0 Release 3 created to update typographical error.
Release 2	This version released with ICT Information and Communications Technology Training Package version 2.0 Release 2 created to update typographical error.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Description

This skill set has been designed for individuals who wish to meet competency requirements for skills in managing complex ICT security and network architecture solutions.

Pathways Information

This skill set provides credit towards ICT50415 Diploma of Information Technology Networking.

Licensing/Regulatory Information

Not applicable.

Skill Set Requirements

ICTNWK529 Install and manage complex ICT networks

ICTNWK538 Install and maintain valid authentication processes

ICTNWK546 Manage network security

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Target Group

This skill set is for persons who are able to work as certified security and architect technology specialists.

Suggested words for Statement of Attainment

These units of competency from ICT Information and Communications Technology Training Package meet competency requirements for skills in working with security and network architecture.

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ICTSS00041 Certified Technician or Technology Specialist - Infrastructure Configuration Skill Set

Modification History

Release	Comments
Release 3	This version released with ICT Information and Communications Technology Training Package version 6.0 Release 3 created to reflect updated units of competency.
Release 2	This version released with ICT Information and Communications Technology Training Package version 2.0 Release 2 created to update typographical error.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Description

This skill set has been designed for individuals who wish to meet competency requirements for skills as a technician to design, build, test and maintain an ICT security and network architecture solution.

Pathways Information

This skill set provides credit towards ICT50415 Diploma of Information Technology Networking.

Licensing/Regulatory Information

Not applicable.

Skill Set Requirements

ICTNWK538 Install and maintain valid authentication processes

ICTNWK540 Design, build and test network servers

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Target Group

This skill set is for persons who are able to work as certified infrastructure configuration technicians or technology specialists.

Suggested words for Statement of Attainment

These units of competency from ICT Information and Communications Technology Training Package meet competency requirements for skills in configuring infrastructure.

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ICTSS00042 Certified Technology Specialist - Graphical User Interfaces Skill Set

Modification History

Release	Comments
Release 3	This version released with ICT Information and Communications Technology Training Package version 6.0. Release 3 created to reflect the updated units of competency.
Release 2	This version released with ICT Information and Communications Technology Training Package version 2.0 Release 2 created to update typographical error.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Description

This skill set has been designed for individuals who wish to meet competency requirements for skills as a technician specialising in the configuration and management of graphics user interfaces.

Pathways Information

This skill set provides credit towards ICT40415 Certificate IV in Information Technology Networking.

Licensing/Regulatory Information

Not applicable.

Skill Set Requirements

ICTNWK423 Manage network and data integrity

ICTNWK427 Configure desktop environments

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Target Group

This skill set is for persons who are able to work as graphical user interface (GUI) certified technology specialists.

Suggested words for Statement of Attainment

These units of competency from ICT Information and Communications Technology Training Package meet competency requirements for skills in developing and maintaining GUIs.

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ICTSS00043 Certified Web Design Specialist Skill Set

Modification History

Release	Comments
Release 4	This version released with ICT Information and Communications Technology Training Package version 6.0. Release 3 created to reflect the updated units of competency.
Release 3	This version released with ICT Information and Communications Technology Training Package version 4.0. Release 3 created to delete ICTWEB409 from this skillset.
Release 2	This version released with ICT Information and Communications Technology Training Package version 2.0 Release 2 created to update typographical error
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Description

This skill set has been designed for individuals who wish to meet competency requirements for skills as a technician in the design, construction, testing and maintenance of web sites.

Pathways Information

This skill set provides credit towards ICT40315 Certificate IV in Web-Based Technologies.

Licensing/Regulatory Information

Not applicable.

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Skill Set Requirements

ICTWEB440 Use web authoring tools

ICTWEB441 Produce basic client-side script

ICTWEB442 Produce interactive web animation

ICTWEB444 Create responsive website layouts

Target Group

This skill set is for persons who are able to work as website designers.

Suggested words for Statement of Attainment

These units of competency from ICT Information and Communications Technology Training Package meet competency requirements for skills in working as a website designer.

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ICTSS00044 Computing and Application Fundamentals Skill Set

Modification History

Release	Comments
Release 3	This version released with ICT Information and Communications Technology Training Package version 6.0 Release 3 created to reflect the updated units of competency.
Release 2	This version released with ICT Information and Communications Technology Training Package version 2.0 Release 2 created to update typographical error.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Description

This skill set has been designed for individuals who wish to meet competency requirements for skills at a foundation level for the safe use of an operating system and basic applications software.

Pathways Information

This skill set provides credit towards ICT20115 Certificate II in Information, Digital Media and Technology

Licensing/Regulatory Information

Not applicable.

Skill Set Requirements

BSBWHS201 Contribute to health and safety of self and others

ICTICT210 Operate database applications

ICTICT213 Use computer operating systems and hardware

ICTICT214 Operate application software packages

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Target Group

This skill set is for persons wanting to use basic information and communications technology (ICT) and application software and work safely in any industry.

Suggested words for Statement of Attainment

These units of competency from ICT Information and Communications Technology and BSB Business Services Training Packages meet competency requirements for basic use of computers and applications.

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ICTSS00046 Digital Literacy - eCitizen Skill Set

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package version 2.0 Release 2 created to update typographical error
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Description

This skill set has been designed for individuals who wish to meet competency requirements for foundation skills in personal computing.

Pathways Information

This skill set provides credit towards ICT10115 Certificate I in Information, Digital Media and Technology.

Licensing/Regulatory Information

Not applicable.

Skill Set Requirements

ICTICT101 Operate a personal computer

ICTICT102 Operate word-processing applications

ICTICT103 Use, communicate and search securely on the internet

Target Group

This skill set is for persons wanting to gain basic digital literacy skills in using a personal computer.

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Suggested words for Statement of Attainment

These units of competency from ICT Information and Communications Technology Training Package meet competency requirements for using a personal computer.

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ICTSS00047 Digital Literacy Skill Set

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package version 2.0 Release 2 created to update typographical error
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Description

This skill set has been designed for individuals who wish to meet competency requirements for a broad range of digital literacy skills including the use of basic computing, web searching and basic applications software.

Pathways Information

This skill set provides credit towards ICT10115 Certificate I in Information, Digital Media and Technology.

Licensing/Regulatory Information

Not applicable.

Skill Set Requirements

ICTICT101 Operate a personal computer

ICTICT102 Operate word-processing applications

ICTICT103 Use, communicate and search securely on the internet

ICTICT105 Operate spreadsheet applications

ICTICT106 Operate presentation packages

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Target Group

This skill set is for persons wanting to gain digital literacy skills in the use of a personal computer, software applications and digital devices.

Suggested words for Statement of Attainment

These units of competency from ICT Information and Communications Technology Training Package meet competency requirements for digital literacy.

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ICTSS00048 Hardware Technician Skill Set

Modification History

Release	Comments
Release 4	This version released with ICT Information and Communications Technology Training Package version 6.0. Release 4 created to reflect the updated units of competency.
Release 3	This version released with ICT Information and Communications Technology Training Package version 4.0. Release 3 created to update the new unit code ICTSAS308.
Release 2	This version released with ICT Information and Communications Technology Training Package version 2.0 Release 2 created to update typographical error
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Description

This skill set has been designed for individuals who wish to meet competency requirements for skills as a basic technician for the installation and configuration of hardware for clients.

Pathways Information

This skill set provides credit towards ICT30118 Certificate III in Information, Digital Media and Technology.

Licensing/Regulatory Information

Not applicable.

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Skill Set Requirements

ICTICT302 Install and optimise operating system software

ICTICT303 Connect internal hardware components

ICTSAS305 Provide IT advice to clients

ICTSAS308 Run standard diagnostic tests

ICTSAS309 Maintain and repair ICT equipment and software

ICTSAS310 Install, configure and secure a small office or home office network

Target Group

This skill set is for persons who are able to work as hardware technicians, providing support in a range of ICT work areas and activities.

Suggested words for Statement of Attainment

These units of competency from ICT Information and Communications Technology Training Package meet competency requirements for support skills in hardware, software, operating systems and networks.

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ICTSS00049 Internetworking Systems Coordinator - Administrator Skill Set

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package version 2.0 Release 2 created to update typographical error
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Description

This skill set has been designed for individuals who wish to meet competency requirements as an internetworking systems coordinator or administrator.

Pathways Information

This skill set provides credit towards ICT60515 Advanced Diploma of Computer Systems Technology.

Licensing/Regulatory Information

Not applicable.

Skill Set Requirements

ICTNWK603 Plan, configure and test advanced internetwork routing solutions

ICTNWK605 Design and configure secure integrated wireless systems

ICTNWK610 Design and build integrated VoIP networks

ICTNWK611 Configure call processing network elements for secure VoIP networks

ICTNWK612 Plan and manage troubleshooting advanced integrated IP networks

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Target Group

This skill set is for persons who are able to work as an internetworking systems administrator or coordinator.

Suggested words for Statement of Attainment

These units of competency from ICT Information and Communications Technology Training Package meet competency requirements for skills in working as an internetworking coordinator or administrator.

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ICTSS00050 Rich Interactive Content Specialist Skill Set

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package version 2.0 Release 2 created to update typographical error and update unit codes
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Description

This skill set has been designed for individuals who wish to meet competency requirements in interactive digital media.

Pathways Information

This skill set provides credit towards ICT30115 Certificate III in Information, Digital Media and Technology.

Licensing/Regulatory Information

Not applicable.

Skill Set Requirements

CUADIG304 Create visual design components

ICTGAM301 Apply simple modelling techniques

ICTGAM302 Design and apply simple textures to digital art

Target Group

This skill set is for persons who are able to work with interactive digital media content.

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Suggested words for Statement of Attainment

These units of competency from ICT Information and Communications Technology and CUA Creative Arts and Culture Training Packages meet competency requirements for skills in interactive digital media.

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ICTSS00051 System and Hardware Plus Technician Skill Set

Modification History

Release	Comments
Release 3	This version released with ICT Information and Communications Technology Training Package version 6.0. Release 3 created to reflect the updated units of competency.
Release 2	This version released with ICT Information and Communications Technology Training Package version 2.0 Release 2 created to update typographical error and update unit code.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Description

This skill set has been designed for individuals who wish to meet competency requirements as a support technician in computer systems hardware.

Pathways Information

This skill set provides credit towards ICT40215 Certificate IV in Information Technology Support.

Licensing/Regulatory Information

Not applicable.

Skill Set Requirements

BSBSUS401 Implement and monitor environmentally sustainable work practices

ICTICT429 Determine and confirm client business requirements

ICTICT445 Connect and configure devices and hardware components

ICTSAS310 Install, configure and secure a small office or home office network

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ICTSAS445 Configure and troubleshoot operating system software

ICTSAS446 Fault find and troubleshoot ICT equipment, hardware and software problems

Target Group

This skill set is for persons who are able to work as a computer system and hardware technician.

Suggested words for Statement of Attainment

These units of competency from ICT Information and Communications Technology and BSB Business Services Training Packages meet competency requirements for support skills in working as a computer system and hardware technician.

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ICTSS00052 System and Network Plus Technician Skill set

Modification History

Release	Comments
Release 4	This version released with ICT Information and Communications Technology Training Package version 6.0. Release 4 created to reflect the updated units of competency.
Release 3	This version released with ICT Information and Communications Technology Training Package version 4.0. Release 3 created to update the new unit code ICTNWK421.
Release 2	This version released with ICT Information and Communications Technology Training Package version 2.0 Release 2 created to update typographical error
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Description

This skill set has been designed for individuals who wish to meet competency requirements as a technician to manage a computer system network.

Pathways Information

This skill set provides credit towards ICT40215 Certificate IV in Information Technology Support.

Licensing/Regulatory Information

Not applicable.

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Skill Set Requirements

ICTNWK421 Install, configure and test network security

ICTNWK422 Install and manage servers

ICTNWK424 Install and operate small enterprise branch networks

ICTSAS310 Install, configure and secure a small office or home office network

Target Group

This skill set is for persons who are able to work as a computer system and network support technician.

Suggested words for Statement of Attainment

These units of competency from ICT Information and Communications Technology Training Package meet competency requirements for skills in working as a network technician.

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ICTSS00053 Virtualisation Specialist Skill Set

Modification History

Release	Comments
Release 3	This version released with ICT Information and Communications Technology Training Package version 6.0. Release 3 created to reflect the updated units of competency.
Release 2	This version released with ICT Information and Communications Technology Training Package version 2.0 Release 2 created to update typographical error.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Description

This skill set has been designed for individuals who wish to meet competency requirements as a specialist in virtualisation for computers, software and systems.

Pathways Information

This skill set provides credit towards ICT50415 Diploma of Information Technology Networking

Licensing/Regulatory Information

Not applicable.

Skill Set Requirements

ICTNWK553 Configure enterprise virtual computing environments

ICTNWK554 Manage enterprise virtual computing environments

ICTNWK559 Install an enterprise virtual computing environment

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Target Group

This skill set is for persons who are able to work in the area of hardware, software and system virtualisation.

Suggested words for Statement of Attainment

These units of competency from ICT Information and Communications Technology Training Package meet competency requirements for skills in in developing hardware, software and system virtual networks.

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ICTSS00054 Visual Communications Specialist Skill Set

Modification History

Release	Comments
Release 3	This version released with ICT Information and Communications Technology Training Package version 6.0. Release 3 created to reflect the updated units of competency.
Release 2	This version released with ICT Information and Communications Technology Training Package version 2.0 Release 2 created to update typographical error and update unit codes.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Description

This skill set has been designed for individuals who wish to meet competency requirements in visual communications specialist skills including video and digital images.

Pathways Information

This skill set provides credit towards ICT30115 Certificate III in Information, Digital Media and Technology.

Licensing/Regulatory Information

Not applicable.

Skill Set Requirements

CUADIG301 Prepare video assets

CUADIG304 Create visual design components

ICTWEB305 Produce digital images for the web

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Target Group

This skill set is for persons wanting to develop visual content for the web.

Suggested words for Statement of Attainment

These units of competency from ICT Information and Communications Technology and CUA Creative Arts and Culture Training Packages meet competency requirements for skills in developing visual components for websites.

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ICTSS00055 Website Administration Specialist Skill Set

Modification History

Release	Comments
Release 3	This version released with ICT Information and Communications Technology Training Package version 6.0. Release 3 created to reflect the updated units of competency.
Release 2	This version released with ICT Information and Communications Technology Training Package version 2.0 Release 2 created to update typographical error.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Description

This skill set has been designed for individuals who wish to meet competency requirements as a website administrator.

Pathways Information

This skill set provides credit towards ICT40315 Certificate IV in Web-Based Technologies.

Licensing/Regulatory Information

Not applicable.

Skill Set Requirements

ICTNWK428 Create scripts for networking

ICTWEB435 Maintain website performance

ICTWEB436 Monitor traffic and compile website traffic reports

ICTWEB437 Create website testing procedures

ICTWEB438 Conduct operational acceptance tests of websites

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ICTWEB439 Confirm basic website security

Target Group

This skill set is for persons who are able to work as website administrators.

Suggested words for Statement of Attainment

These units of competency from ICT Information and Communications Technology Training Package meet competency requirements for skills in working as a website administrator.

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ICTSS00056 Enterprise Desktop Virtualisation Specialist Skill Set

Modification History

Release	Comments
Release 3	This version released with ICT Information and Communications Technology Training Package version 6.0. Release 3 created to reflect the updated units of competency.
Release 2	This version released with ICT Information and Communications Technology Training Package version 2.0 Release 2 created to update typographical error.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Description

This skill set has been designed for individuals who wish to meet competency requirements as a professional desktop virtualisation technology specialists for business and enterprises.

Pathways Information

This skill set provides credit towards ICT60215 Advanced Diploma of Network Security.

Licensing/Regulatory Information

Not applicable.

Skill Set Requirements

ICTCLD602 Manage information security compliance of cloud service deployment

ICTICT617 Lead the evaluation and implementation of current industry specific technologies

ICTPRG605 Manage development of technical solutions from business specifications

ICTNWK615 Design and configure desktop virtualisation

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Target Group

This skill set is for persons wanting to work as certified professional desktop virtualisation technology specialists.

Suggested words for Statement of Attainment

These units of competency from ICT Information and Communications Technology Training Package meet competency requirements for skills in working as a network professional specialising in desktop virtualisation technology.

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ICTSS00057 Enterprise Server Virtualisation Specialist Skill Set

Modification History

Release	Comments
Release 3	This version released with ICT Information and Communications Technology Training Package version 6.0 Release 3 created to reflect updated units of competency.
Release 2	This version released with ICT Information and Communications Technology Training Package version 2.0 Release 2 created to update typographical error.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Description

This skill set has been designed for individuals who wish to meet competency requirements as a specialist professional in server and computer virtualisation technologies.

Pathways Information

This skill set provides credit towards ICT50415 Diploma of Information Technology Networking.

Licensing/Regulatory Information

Not applicable.

Skill Set Requirements

ICTNWK552 Install and configure network access storage devices

ICTNWK553 Configure enterprise virtual computing environments

ICTNWK554 Manage enterprise virtual computing environments

ICTNWK557 Configure and manage advanced virtual computing environments

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ICTNWK558 Monitor and troubleshoot virtual computing environments

ICTNWK559 Install an enterprise virtual computing environment

Target Group

This skill set is for persons wanting to work as certified professional server virtualisation technology specialists.

Suggested words for Statement of Attainment

These units of competency from ICT Information and Communications Technology Training Package meet competency requirements for skills in working as a network professional specialising in virtualisation technology.

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ICTSS00059 Advanced ICT Sustainability Skill Set

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Description

This skill set addresses the skills and knowledge required in the installation of sustainable information and communications technology (ICT) networks using internet protocol convergence and virtualisation technologies.

Pathways Information

This skill set provides credit towards ICT51015 Diploma of Telecommunications Engineering.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this skill set at the time of publication.

Skill Set Requirements

ICTSUS404 Install thin client applications for power over ethernet

ICTSUS501 Implement server virtualisation for a sustainable ICT system

BSBSUS501 Develop workplace policy and procedures for sustainability

Target Group

This skill set is targeted at existing workers in the telecommunications industry.

Suggested words for Statement of Attainment

These units of competency meet industry requirements for installing sustainable information and communications technology (ICT) network equipment.

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Custom Content Section

Not applicable.

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ICTSS00061 Basic ICT Sustainability Skill Set

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package version 4.0. Release 2 created to delete ICTSUS401 from this skillset.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Description

This skill set addresses the skills and knowledge required for the installation of information and communication technology (ICT) networks using technologies to reduce energy consumption.

Pathways Information

This skill set provides credit towards ICT41215 Certificate IV in Telecommunications Engineering Technology.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this skill set at the time of publication.

Skill Set Requirements

ICTSUS402 Install and test power saving hardware

ICTSUS403 Install and test power management software

Target Group

This skill set is targeted at existing workers in the telecommunications industry.

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Suggested words for Statement of Attainment

These units of competency meet industry requirements for work in the installation of ICT network equipment using technologies to reduce energy consumption.

Custom Content Section

Not applicable.

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ICTSS00065 Civil Works - Installation of Pit and Pipe and FDH Skill Set

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Description

This skill set addresses the skills and knowledge required to work in National Broadband Network (NBN) construction roles.

^ From 1 July 2022 the unit HLTAID001 must no longer be delivered and will be replaced in the Packaging Rules by the unit HLTAID009 - for more information see: https://asqa.gov.au/news-events/news/reminder-about-superseded-hlt-first-aid-units

Pathways Information

This skill set provides credit towards the ICT20219 Certificate II in Telecommunications Network Build and Operation.

Licensing/Regulatory Information

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Skill Set Requirements

CPCCOHS1001A Work safely in the construction industry

HLTAID001 Provide cardiopulmonary resuscitation

^ HLTAID009 Provide cardiopulmonary resuscitation (must be delivered from 1 July 2022)

ICTCBL211 Install an above ground equipment enclosure

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ICTCBL253 Construct underground telecommunications infrastructure

ICTPMG201 Prepare site for support installation

ICTTEN202 Use hand and power tools

ICTWHS204 Follow work health and safety and environmental policy and procedures

Target Group

This skill set is for new of existing workers in the telecommunications industry who wish to work in NBN construction.

Suggested words for Statement of Attainment

These units of competency meet industry requirements for the installation of pit and pipe and fibre distribution hub (FDH) cabinets.

Custom Content Section

Not applicable.

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ICTSS00066 Commercial Digital Television Antenna Systems Installation Skill Set

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Description

This skill set addresses the skills and knowledge required to work within the digital reception sector of the telecommunication industry in commercial antenna installation. The more complex antenna installations include Master Antenna TV (MATV) and Communal Antenna TV (CATV) systems.

Pathways Information

This skill set provides credit towards ICT30519 Certificate III in Telecommunications Technology.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this skill set at the time of publication.

Skill Set Requirements

ICTCBL206 Alter services to existing cable system

ICTCBL306 Locate and identify cable system faults

ICTDRE303 Install a complex digital reception system

ICTWHS204 Follow work health and safety and environmental policy and procedures

ICTRFN407 Conduct radio frequency measurements

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Target Group

This skill set is for experienced personnel who may have undertaken the domestic antenna installation program, or similar, and wish to work in commercial antenna installation.

Suggested words for Statement of Attainment

These units of competency meet industry requirements for working in commercial antenna installation.

Custom Content Section

Not applicable.

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ICTSS00068 Designer Skill Set

Modification History

Release	Comments
Release 3	This version released with ICT Information and Communications Technology Training Package Version 6.0. Release 3 created to reflected the updated units of competency.
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Description

This skill set addresses the skills and knowledge required to design information and communications technology (ICT) access networks.

Pathways Information

This skill set provides credit towards ICT41119 Certificate IV in Telecommunications Network Design.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this skill set at the time of publication.

Skill Set Requirements

ICTBWN303 Install lead-in module and cable for fibre to the premises

ICTCBL253 Construct underground telecommunications infrastructure

ICTCBL333 Install aerial cable for communications applications

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ICTICT519 Develop detailed component specifications from project specifications

ICTNPL402 Plan the deployment of access network architectures

Target Group

This skill set is for individuals, with limited experience in the telecommunications industry, who require training in network design.

Suggested words for Statement of Attainment

These units of competency meet industry requirements for designing access networks.

Custom Content Section

Not applicable.

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ICTSS00069 Domestic Digital Television Antenna Installation Skill Set

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Description

This skill set addresses the skills and knowledge required to work in the digital reception sector of the telecommunication industry installing basic terrestrial antenna systems in single dwelling installations.

Pathways Information

This skill set provides credit towards ICT20319 Certificate II in Telecommunications Technology and the ICT30519 Certificate III in Telecommunications Technology.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this skill set at the time of publication.

Skill Set Requirements

ICTCBL303 Install and terminate coaxial cable

ICTDRE301 Install digital reception equipment

ICTRFN202 Install a terrestrial antenna

ICTRFN407 Conduct radio frequency measurements

ICTTEN202 Use hand and power tools

ICTWHS204 Follow work health and safety and environmental policy and procedures

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Target Group

This skill set is for new or existing workers who wish to gain the skills and knowledge required to install and maintain terrestrial antenna systems and associated digital reception equipment.

Suggested words for Statement of Attainment

These units of competency meet industry requirements for the installation and maintenance of antenna systems and associated digital reception equipment.

Custom Content Section

Not applicable.

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ICTSS00071 IP Convergence Installations for Home and SME Skill Set

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Description

This skill set addresses the skills and knowledge required to use internet protocol (IP) technologies in the installation and maintenance of secure telecommunication networks in homes and small to medium enterprises.

Pathways Information

This skill set provides credit towards ICT20319 Certificate II in Telecommunications Technology.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this skill set at the time of publication.

Skill Set Requirements

ICTTEN207 Install and test internet protocol devices in convergence networks

ICTTEN203 Install and configure a home or small office network

ICTTEN204 Install and configure a small to medium business network

ICTTEN205 Build and maintain a secure network

ICTTEN206 Operate new media software packages

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Target Group

This skill set is for individuals who wish to work in the installation of modern telecommunications networks.

Suggested words for Statement of Attainment

These units of competency meet industry requirements for work in the installation and maintenance of secure telecommunications networks in homes and small to medium enterprises.

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ICTSS00076 Wireless LAN and IP Network Installation Skill Set

Modification History

Release	Comments
Release 4	This version released with ICT Information and Communications Technology Training Package version 6.0. Release 4 created to reflect the updated units of competency.
Release 3	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 2	This version released with ICT Information and Communications Technology Training Package version 4.0. Release 2 created to update the new unit code ICTNWK421.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Description

This skill set addresses the skills and knowledge required in the installation of a secure wireless local access network (LAN) and associated networking elements.

Pathways Information

This skill set provides credit towards ICT41219 Certificate IV in Telecommunications Engineering Technology.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this skill set at the time of publication.

Skill Set Requirements

ICTNWK421 Install, configure and test network security

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ICTNWK432 Build an enterprise wireless network

ICTWHS202 Work safely in a radio frequency electromagnetic radiation environment

ICTTEN312 Install telecommunications network equipment

ICTTEN417 Install, configure and test a router

ICTTEN434 Install, configure and test internet protocol networks

Target Group

This skill set is for those individuals who require further training in the installation of information and communication technology networks.

Suggested words for Statement of Attainment

These units of competency meet industry requirements for installing secure wireless local access networks.

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ICTSS00077 Telecommunications Linesworker Copper Skill Set

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Description

This skill set addresses the skills and knowledge required to install copper telecommunications cable. Each unit of competency includes relevant work, health and safety awareness training. Other health, safety and environment requirements, relevant to the role specified in this skill set, may be stipulated as part of workplace requirements.

Pathways Information

This skill set provides credit towards the ICT20219 Certificate II in Telecommunications Network Build and Operation.

Licensing/Regulatory Information

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Skill Set Requirements

ICTCBL211 Install an above ground equipment enclosure

ICTCBL249 Haul underground cable

ICTCBL250 Haul and fix aerial cable

ICTCBL253 Construct underground telecommunications infrastructure

ICTCBL320 Jumper metallic conductor cable in the access network

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ICTPMG201 Prepare site for support installation

Target Group

This skill set is for entry level telecommunications workers.

Suggested words for Statement of Attainment

These units of competency meet industry requirements for the installation of copper telecommunications cable.

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ICTSS00078 Telecommunications Linesworker Fibre Skill Set

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Description

This skill set addresses the skills and knowledge required to install telecommunications optical fibre cable. Each unit of competency includes relevant work, health and safety awareness training. Other health, safety and environment requirements, relevant to the role specified in this skill set, may be stipulated as part of workplace requirements.

Pathways Information

This skill set provides credit towards the ICT20519 Certificate II in Telecommunications Network Build and Operation.

Licensing/Regulatory Information

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Skill Set Requirements

ICTCBL249 Haul underground cable

ICTCBL211 Install an above ground equipment enclosure

ICTCBL250 Haul and fix aerial cable

ICTCBL253 Construct underground telecommunications infrastructure

ICTPMG201 Prepare site for support installation

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ICTTEN310 Remove and replace electronic circuit boards in carrier equipment

ICTTEN318 Inspect, clean and handle optical fibre cable and connectors

Target Group

This skill set is for entry level telecommunications workers.

Suggested words for Statement of Attainment

These units of competency meet industry requirements for the installation of telecommunications optical fibre cable.

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ICTSS00080 Copper Cable Jointer Skill Set

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Description

This skill set addresses the skills and knowledge required to joint copper telecommunications cable. Each unit of competency includes relevant work, health and safety awareness training. Other health, safety and environment requirements, relevant to the role specified in this skill set, may be stipulated as part of workplace requirements.

Pathways Information

This skill set provides credit towards the ICT30419 Certificate III in Telecommunications Network Build and Operation.

Licensing/Regulatory Information

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Skill Set Requirements

ICTCBL254 Joint metallic conductor cable in access network

ICTCBL326 Cut over metallic conductor cable in the access network

ICTCBL319 Rearrange large size copper cable

ICTCBL336 Install and cut over metallic conductor cable to access network cabinet

ICTTEN312 Install telecommunications network equipment

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ICTTEN313 Work on and resolve recurrent network faults

Target Group

This skill set is for telecommunications workers.

Suggested words for Statement of Attainment

These units of competency meet industry requirements for the jointing of copper telecommunications cable.

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ICTSS00083 Underground Installations Skill Set

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 5.0.
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Description

This skill set addresses the skills and knowledge required to install underground telecommunications cable. This Skill Set includes the requirements for the underground specialisation units for ACMA. Each unit of competency includes relevant work, health and safety awareness training. Other health, safety and environment requirements, relevant to the role specified in this skill set, may be stipulated as part of workplace requirements.

Pathways Information

This skill set provides credit towards:

ICT20219 Certificate II in Telecommunications Network Build and Operation

ICT30419 Certificate III in Telecommunications Network Build and Operation

ICT30519 Certificate III in Telecommunications Technology.

Licensing/Regulatory Information

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Skill Set Requirements

ICTCBL329 Install underground cable

ICTCBL334 Install underground enclosures and conduit

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Target Group

This skill set is for telecommunications workers.

Suggested words for Statement of Attainment

These units of competency meet industry requirements to install underground telecommunications cable within the ACMA Regulatory framework for Customer Premises.

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ICTSS00084 Basic Open Cabler Registration Skill Set

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Description

This skill set addresses the skills and knowledge required to install, maintain and modify telecommunications customer cabling in domestic and commercial premises in accordance with Australian Communications and Media Authority (ACMA) requirements.

Pathways Information

This skill set provides credit towards ICT30519 Certificate III in Telecommunications Technology.

Licensing/Regulatory Information

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Skill Set Requirements

ICTCBL247 Install, maintain and modify customer premises communications cabling: ACMA Open Rule

ICTTEN208 Use electrical skills in telecommunications work

ICTTEN202 Use hand and power tools

ICTWHS204 Follow work health and safety and environmental policy and procedures

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Target Group

This skill set is for new or existing workers in the telecommunications industry who wish to be employed as open registered cablers in accordance with ACMA requirements.

Suggested words for Statement of Attainment

These units of competency contribute to the Australian Communications and Media Authority training requirements for open cabling registration.

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ICTSS00085 Basic Restricted Cabler Registration Skill Set

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Description

This skill set addresses the skills and knowledge required to perform a restricted range of residential and small business cabling work in accordance with Australian Communications and Media Authority (ACMA) requirements.

Pathways Information

This skill set provides credit towards ICT20319 Certificate II in Telecommunications Technology.

Licensing/Regulatory Information

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Skill Set Requirements

ICTCBL246 Install, maintain and modify customer premises communications cabling: ACMA Restricted Rule

ICTCMP203 Perform restricted customer premises broadband cabling work: ACMA Restricted Rule

ICTTEN202 Use hand and power tools

ICTTEN208 Use electrical skills when working with telecommunications networks

ICTWHS204 Follow work health and safety and environmental policy and procedures

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Target Group

This skill set is for new or existing workers in the telecommunications industry who wish to be employed as restricted registered cablers in accordance with ACMA requirements.

Suggested words for Statement of Attainment

These units of competency contribute to the Australian Communications and Media Authority training requirements for restricted cabling registration.

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ICTSS00086 ACMA Advanced Cabler Registration Skill Set

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Description

This skill set covers the additional training required for an open registered cabler to install, maintain, test and certify copper, fibre and coaxial installations in customer premises in accordance with Australian Communications and Media Authority (ACMA) requirements.

Pathways Information

This skill set provides credit towards ICT30519 Certificate III in Telecommunications Technology.

Licensing/Regulatory Information

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Skill Set Requirements

ICTCBL247 Install, maintain and modify customer premises communications cabling: ACMA Open Rule

ICTCBL301 Install, terminate and certify structured cabling installation

ICTCBL303 Install and terminate coaxial cable

ICTCBL322 Install and terminate optical fibre cable on customer premises

ICTCBL323 Perform cable and system test on customer premises

ICTTEN208 Use electrical skills when working with telecommunications networks

ICTWHS204 Follow work health and safety and environmental policy and procedures

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Target Group

This skill set is for ACMA open registered cablers who need additional training to carry out specialist work.

Suggested words for Statement of Attainment

These units of competency contribute to the Australian Communications and Media Authority requirements for mandatory specialist cabling endorsement of an existing open registered cabler.

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ICTSS00087 Basic Technician Network Build and Operate Skill Set

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Description

This skill set addresses the introductory skills and knowledge required in a range of NBN broadband industry occupations specifically for the national rollout construction and maintenance of the high-speed broadband infrastructure.

Pathways Information

This skill set provides credit towards the ICT30419 Certificate II in Telecommunications Network Build and Operation.

Licensing/Regulatory Information

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Skill Set Requirements

ICTTEN208 Use electrical skills in telecommunications work

ICTTEN202 Use hand and power tools

ICTWHS204 Follow work health and safety and environmental policy and procedures

ICTTEN315 Understand telecommunications principles

ICTWOR308 Provide customer service to telecommunications clients

ICTTEN317 Locate, identify and rectify telecommunications network faults

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Target Group

This skill set is for entry level workers.

Suggested words for Statement of Attainment

These units of competency meet industry requirements for construction and maintenance of the high-speed broadband infrastructure.

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ICTSS00088 Advanced Telecommunications Rigging Installation Skill Set

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Description

This skill set addresses the advanced level skills and knowledge required to install telecommunications network infrastructure on structures. It prepares individuals to work for carriers in the practical application of network equipment on structures.

Pathways Information

This skill set provides credit towards ICT30319 Certificate III in Telecommunications Technology.

Licensing/Regulatory Information

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Skill Set Requirements

ICTTCR201 Use rigging practices and systems on telecommunications network structures

ICTTCR202 Use operational safety in a telecommunications rigging environment

ICTTCR203 Use safe rigging practices to climb and perform rescues on telecommunications network structures

ICTTCR301 Build a telecommunications radio structure

ICTTCR302 Install radio plant and equipment on telecommunications structures

ICTTCR303 Protect against electromagnetic radiation and systems hazards when working on telecomms radio sites

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Target Group

This skill set is designed for individuals who are experienced in basic rigging practices and the installation of telecommunications network infrastructure on structures.

Suggested words for Statement of Attainment

These units of competency meet the industry requirements for advanced level skills in installing telecommunications network infrastructure on structures.

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ICTSS00089 Basic Telecommunications Rigging Installation Skill Set

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Description

This skill set addresses the skills and knowledge required to install telecommunications network infrastructure on structures.

Pathways Information

This skill set provides credit towards ICT20319 Certificate II in Telecommunications Technology.

Licensing/Regulatory Information

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Skill Set Requirements

CPCCLDG3001A Licence to perform dogging

CPCCLRG3001A Licence to perform rigging basic level

ICTRFN301 Install a radio communications antenna and feedline

ICTTCR201 Use rigging practices and systems on telecommunications network structures

ICTTCR202 Use operational safety in a telecommunications rigging environment

ICTTCR203 Use safe rigging practices to climb and perform rescues on telecommunications network structures

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Target Group

This skill set is targeted at new or existing workers in the telecommunications industry who wish to develop basic skills in rigging.

Suggested words for Statement of Attainment

These units of competency meet the industry requirements for advanced level skills in installing telecommunications network infrastructure on structures.

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ICTSS00090 Advanced IoT Installation Skill Set

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Description

This skill set addresses the skills and knowledge required to use internet protocol (IP) technologies in the installation of information and communication technology (ICT) networks in homes and small to medium enterprises.

The skill set addresses all DRT delivery methods including but not limited to

- Wireless
- Satellite
- Fibre (FTTX)
- HFC

This Skill Set is for cablers who have completed:

ICTCBL247 Install, maintain and modify customer premises communications cabling: ACMA Open Rule

ICTCBL301 Install, terminate and certify structured cabling installation

Pathways Information

This skill set provides credit towards ICT41219 Certificate IV in Telecommunications Engineering Technology.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this skill set at the time of publication.

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Skill Set Requirements

ICTDRE302 Locate and rectify digital reception equipment faults

ICTEDU301 Train customers in new technology

ICTRFN407 Conduct radio frequency measurements

ICTTEN415 Install and configure internet protocol TV in a home network

ICTTEN425 Design, install and configure a customer smart technology network

Target Group

This skill set is for personnel who require training in the installation of ICT and convergent networks.

Suggested words for Statement of Attainment

These units of competency meet industry requirements related to the installation of information and communication technology networks in homes and small to medium enterprises.

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ICTSS00091 Radio Technician Skill Set

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Description

This skill set addresses the skills and knowledge required to install, modify and maintain basic radio communications networks.

Pathways Information

This skill set provides credits towards ICT41219 Certificate IV in Telecommunications Engineering Technology.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this skill set at the time of publication.

Skill Set Requirements

ICTRFN301 Install a radio communications antenna and feedline

ICTRFN304 Construct and test a radio communications device

ICTRFN407 Conduct radio frequency measurements

ICTTEN208 Use electrical skills in telecommunications work

ICTTEN312 Install telecommunications network equipment

ICTTEN410 Locate, diagnose and rectify faults

ICTTEN414 Repair telecommunication system faults

ICTWHS204 Follow work health and safety and environmental policy and procedures

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Target Group

This skill set is suitable for individuals with limited experience in the telecommunications industry who wish to specialise in radio communications.

Suggested words for Statement of Attainment

These units of competency meet industry requirements for working in the installation, modification and maintenance of basic radio communications networks.

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ICTSS00092 Technical Help Desk Support Skill Set

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Description

This skill set addresses the skills and knowledge required to provide information and communication technology (ICT) advice to customers and to resolve technical enquiries.

Pathways Information

This skill set provides credit towards ICT30519 Certificate III in Telecommunications Technology.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this skill set at the time of publication.

Skill Set Requirements

ICTSAS305 Provide ICT advice to clients

ICTWOR306 Resolve technical enquiries using multiple information systems

ICTWOR308 Provide Customer Service to telecommunications clients

Target Group

This skill set is for Telecommunications Cablers who wish to provide help desk support.

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Suggested words for Statement of Attainment

These units of competency meet industry requirements for help desk support roles.

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ICTSS00093 Telecommunications Linesworker HFC Skill Set

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Description

This skill set addresses the skills and knowledge required for TAP down installation of hybrid fibre coaxial (HFC) cable. Each unit of competency includes relevant work, health and safety awareness training. Other health, safety and environment requirements, relevant to the role specified in this skill set, may be stipulated as part of workplace requirements.

Pathways Information

This skill set provides credit towards the ICT20219 Certificate II in Telecommunications Network Build and Operation.

Licensing/Regulatory Information

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Skill Set Requirements

ICTCBL249 Haul underground cable

ICTCBL250 Haul and fix aerial cable

ICTCBL251 Install a cable lead-in

ICTCBL252 Joint and terminate coaxial cable

ICTBWN306 Use radio frequency measuring instruments

ICTPMG201 Prepare site for support installation

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Target Group

This skill set is for entry level telecommunications workers.

Suggested words for Statement of Attainment

These units of competency meet industry requirements for TAP down installation of HFC cable.

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ICTSS00094 Technician Fibre Skill Set

Modification History

Release	Comments
Release 2	This version released with ICT Information and Communications Technology Training Package Version 6.0. Release 2 created to reflect the updated units of competency.
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Description

This skill set addresses the skills and knowledge required to install, test and terminate telecommunications optical fibre cable. Each unit of competency includes relevant work, health and safety awareness training. Other health, safety and environment requirements, relevant to the role specified in this skill set, may be stipulated as part of workplace requirements.

Pathways Information

This skill set provides credit towards the ICT30419 Certificate III in Telecommunications Network Build and Operation.

Licensing/Regulatory Information

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Skill Set Requirements

ICTBWN308 Work safely on live optical fibre installations

ICTBWN307 Use optical measuring instruments

ICTWHS204 Follow work health and safety and environmental policy and procedures

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ICTCBL322 Install and terminate optical fibre cable on customer premises

ICTTEN310 Remove and replace electronic circuit boards in carrier equipment

ICTTEN318 Inspect, clean and handle optical fibre cable and connectors

ICTTEN409 Commission an electronic system

ICTTEN434 Install, configure and test internet protocol networks

Target Group

This skill set is for entry level telecommunications workers.

Suggested words for Statement of Attainment

These units of competency meet industry requirements for working with telecommunications optical fibre cable.

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ICTSS00095 Fibre Splicer Skill Set

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Description

This skill set addresses the skills and knowledge required to splice telecommunications fibre. Each unit of competency includes relevant work, health and safety awareness training. Other health, safety and environment requirements, relevant to the role specified in this skill set, may be stipulated as part of workplace requirements.

Pathways Information

This skill set provides credit towards the ICT30419 Certificate III in Telecommunications Network Build and Operation.

Licensing/Regulatory Information

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Skill Set Requirements

ICTBWN302 Install optical fibre splitters in fibre distribution hubs

ICTBWN308 Work safely on live optical fibre installations

ICTBWN307 Use optical measuring instruments

ICTWHS204 Follow work health and safety and environmental policy and procedures

ICTCBL316 Install ribbon fibre cable in the FTTX distribution network

ICTCBL330 Splice and terminate optical fibre cable for carriers and service providers

ICTTEN318 Inspect, clean and handle optical fibre cable and connectors.

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Target Group

This skill set is for entry level telecommunications workers.

Suggested words for Statement of Attainment

These units of competency meet industry requirements to splice telecommunications fibre.

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ICTSS00096 Technician Hybrid Fibre Coaxial Skill Set

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Description

This skill set reflects the role of operators in performing underground and aerial equipment and system installations from the tap to the optical node. This role works on access network to enable efficient interconnection to the NBN broadband services. This includes connection and termination of HFC cabling, diagnosing and rectifying HFC system faults.

Pathways Information

This skill set provides credit towards the ICT30419 Certificate III in Telecommunications Network Build and Operation.

Licensing/Regulatory Information

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Skill Set Requirements

ICTBWN306 Use radio frequency measuring instruments

ICTCBL248 Install and terminate hard-line coaxial cable

ICTCBL333 Install aerial cable for communications applications

ICTTEN312 Install telecommunications network equipment

Target Group

This skill set is for entry level telecommunications workers.

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Suggested words for Statement of Attainment

These units of competency meet industry requirements for tap to the optical node work on Hybrid Fibre Coaxial access network to enable efficient access and interconnection to the NBN broadband services.

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ICTSS00097 Telecommunications Customer Service Technician - HFC Technician Skill Set

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Description

This skill set reflects the role of operators installing, activating and assuring HFC equipment and systems from the last connection point of the network to the customer premises (tap to NTD) to enable efficient access and interconnection to the NBN broadband services.

Pathways Information

This skill set provides credit towards the ICT30419 Certificate III in Telecommunications Network Build and Operation.

Licensing/Regulatory Information

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Skill Set Requirements

ICTBWN306 Use radio frequency measuring instruments

ICTCBL303 Install and terminate coaxial cable

ICTDRE314 Design communications wiring systems for customer premises

ICTTEN312 Install telecommunications network equipment

ICTCBL251 Install aerial and underground cable lead-ins

ICTCBL306 Locate and identify cable system faults

ICTDRE308 Install a cable broadband multi-dwelling unit system

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ICTTEN207 Install and test internet protocol devices in convergence networks

Target Group

This skill set is for entry level telecommunications workers.

Suggested words for Statement of Attainment

These units of competency meet industry requirements for tap to NTD work on Hybrid Fibre Coaxial access network to enable efficient interconnection to the NBN broadband services.

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ICTSS00098 Network Technician HFC Skill Set

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Description

This skill set provides individuals with skills and knowledge that reflects the role of an advanced Hybrid Fibre Coaxial (HFC) technician (technical officer), team leader or supervisor with a wide range of telecommunications skills. This role works on the access network to enable efficient interconnection to the NBN broadband services. This includes diagnosing and rectifying complex HFC system faults, commissioning and verifying the HFC network performance.

Pathways Information

This skill set provides credit towards the ICT41219 Certificate IV in Telecommunications Engineering Technology.

Licensing/Regulatory Information

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Skill Set Requirements

ICTTEN208 Use electrical skills in telecommunications work

ICTTEN410 Locate, diagnose and rectify faults

ICTRFN406 Maintain hybrid fibre coaxial broadband cable network

ICTTEN409 Commission an electronic system

ICTTEN312 Install telecommunications network equipment

ICTRFN405 Conduct radio frequency measurements

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Target Group

This skill set is for telecommunications workers.

Suggested words for Statement of Attainment

These units of competency meet industry requirements to meet a wide range of telecommunications skills.

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ICTSS00099 Cloud Design and Configuration Skill Set

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.
Release 2	Correcting an error. No change to skill set content.

Description

This skill set addresses the skills and knowledge required to assess, design, improve and monitor cloud architecture within Information and Communications Technology (ICT) environments.

Pathways Information

The units provide credit towards ICT50120 Diploma of Information Technology and other qualifications that allow for selection of these units.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this skill set at the time of publication.

Skill Set Requirements

ICTCLD501 Develop cloud disaster recovery plans

ICTCLD502 Design and implement highly available cloud infrastructure

ICTCLD503 Implement web-scale cloud infrastructure

ICTCLD504 Improve cloud-based infrastructure

Target Group

This skill set is for cloud architects, cloud network engineers, cloud consultants and cloud developers who use cloud computing solutions for organisations.

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Suggested words for Statement of Attainment

These units of competency from ICT Information and Communications Technology Training Package meet industry requirements for cloud computing in organisations.

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ICTSS00100 Cloud Implementation and Maintenance Skill Set

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Description

This skill set addresses the skills and knowledge required to implement and maintain cloud computing solutions within organisations.

Pathways Information

The units provide credit towards ICT50120 Diploma of Information Technology and other qualifications that allow for selection of these units.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this skill set at the time of publication.

Skill Set Requirements

ICTCLD505 Implement cloud infrastructure with code

ICTCLD506 Implement virtual network in cloud environments

ICTCLD507 Build and deploy resources on cloud platforms

ICTCLD508 Manage infrastructure in cloud environments

Target Group

This skill set is for cloud engineers, cloud systems administrators and those who work within cloud computing operations to program, implement and maintain cloud computing solutions for businesses.

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Suggested words for Statement of Attainment

These units of competency from ICT Information and Communications Technology Training Package meet industry requirements for cloud engineering in organisations.

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ICTSS00101 Cyber Incident Response Skill Set

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Description

This skill set addresses the skills and knowledge required to respond to cyber security incidents within organisations in Information and Communication Technology (ICT) environments.

Pathways Information

The units provide credit towards ICT40120 Certificate IV in Information Technology and other qualifications that allow for selection of these units.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this skill set at the time of publication.

Skill Set Requirements

ICTCYS402 Identify and confirm cyber security incidents

ICTCYS403 Plan and implement information security strategies for an organisation

ICTCYS406 Respond to cyber security incidents

Target Group

This skill set is for information technology security administrators and network administrators who work in information technology security within business environments.

Suggested words for Statement of Attainment

These units of competency from ICT Information and Communications Technology Training Package meet industry requirements for cyber security incident response organisations.

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ICTSS00102 Cyber Incident Threat Detection and Prevention Skill Set

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Description

This skill set addresses the skills and knowledge required to run vulnerability assessments, interpret information for threats and develop incident response plans to maintain cyber security.

Pathways Information

The units provide credit towards ICT40120 Certificate IV in Information Technology and other qualifications that allow for selection of these units.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this skill set at the time of publication.

Skill Set Requirements

ICTCYS404 Run vulnerability test assessments for an organisation

ICTCYS405 Develop cyber security incident response plans

ICTCYS407 Gather, analyse and interpret threat data

Target Group

This skill set is for network penetration testers, information and technology security consultants, and network and security consultants who work in business environments.

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Suggested words for Statement of Attainment

These units of competency from ICT Information and Communications Technology Training Package meet industry requirements for cyber security threat detection and prevention in ICT contexts.

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ICTSS00103 Cyber Security Strategy and Governance Skill Set

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Description

This skill set addresses the skills and knowledge required to identify and implement cyber security standards within organisations.

Pathways Information

The units provide credit towards ICT60120 Advanced Diploma of Information Technology and other qualifications that allow for selection of these units.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this skill set at the time of publication.

Skill Set Requirements

ICTCYS601 Create cyber security standards for organisations

ICTCYS604 Implement best practices for identity management

ICTCYS606 Evaluate an organisation’s compliance with relevant cyber security standards and law

ICTCYS608 Perform cyber security risk assessments

Target Group

This skill set is for Information and Communications Technology security (ICT) consultants, cyber security analysts, business development managers, cyber risk and assurance managers, network security consultants and administrators, ICT risk managers, cyber security solutions architects and network engineers who implement cyber security standards within businesses.

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Suggested words for Statement of Attainment

These units of competency from ICT Information and Communications Technology Training Package meet industry requirements for cyber security management in ICT contexts.

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ICTSS00104 Data Analysis Skill Set

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Description

This skill set addresses the skills and knowledge required to manipulate data and report data abnormalities in Information and Communication Technology (ICT) environments.

Pathways Information

The units provide credit towards ICT50120 Diploma of Information Technology and other qualifications that allow for selection of these units.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this skill set at the time of publication.

Skill Set Requirements

ICTDAT501 Gather, analyse and verify data from different source inputs

ICTDAT502 Conduct significance tests

ICTDAT503 Use unsupervised learning for clustering

Target Group

This skill set is for data analysts, data scientists, and machine learning engineers, developers and programmers who analyse and test data against business requirements.

Suggested words for Statement of Attainment

These units of competency from ICT Information and Communications Technology Training Package meet industry requirements for data analysis and management in ICT contexts.

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ICTSS00105 Internet of Things Developer Skill Set

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Description

This skill set addresses the skills and knowledge required to design, program and assess Internet of Things (IoT) devices.

Pathways Information

The units provide credit towards ICT50120 Diploma of Information Technology, ICT60120 Advanced Diploma of Information Technology and other qualifications that allow for selection of these units.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this skill set at the time of publication.

Skill Set Requirements

ICTCYS609 Evaluate threats and vulnerabilities of IoT devices

ICTIOT502 Program IoT devices

ICTIOT503 Design and test IoT devices and networks

Target Group

This skill set is for software developers and programmers, IoT developers, cyber security and risk analysts, software developers, programmers and network engineers who work in businesses.

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Suggested words for Statement of Attainment

These units of competency from ICT Information and Communications Technology Training Package meet industry requirements for IoT developers in ICT contexts.

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ICTSS00106 Introductory Tools and Applications Skill Set

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Description

This skill set addresses the skills and knowledge required to use basic computer operating systems, computer hardware, software applications and digital texts for a range of purposes required within an Information and Communications Technology (ICT) context.

Pathways Information

The units provide credit towards Certificate III in Information Technology and other qualifications that allow for selection of these units.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this skill set at the time of publication.

Skill Set Requirements

BSBITU211 Produce digital text documents

ICTICT206 Install software applications

ICTICT213 Use computer operating systems and hardware

ICTICT216 Design and create basic organisational documents

ICTICT221 Identify and use specific industry standard technologies

Target Group

This skill is for individuals looking to enter the ICT industry who will use basic computing operating systems, computer hardware, software applications and digital texts for a range of purposes.

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Suggested words for Statement of Attainment

These units of competency from BSB Business Services and ICT Information and Communications Technology Training Packages meet industry requirements for applying introductory computer tools and applications in ICT contexts.

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ICTSS00107 Introductory Help Desk Skill Set

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Description

This skill set addresses the skills and knowledge required to perform routine Information and Communications Technology (ICT) support for a range of purposes required within an ICT context.

Pathways Information

The units provide credit towards ICT 30120 Certificate III in Information Technology and other qualifications that allow for selection of these units.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this skill set at the time of publication.

Skill Set Requirements

ICTICT219 Interact and resolve queries with ICT clients

ICTSAS210 Update and maintain hardware, software and documentation inventories

ICTSAS211 Develop solutions for basic ICT malfunctions and problems

ICTSAS213 Maintain ICT system integrity

Target Group

This skill is for individuals looking to enter the ICT industry who will provide routine help desk support.

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Suggested words for Statement of Attainment

These units of competency from ICT Information and Communications Technology Training Packages meet industry requirements for applying routine maintenance and troubleshooting skills in ICT contexts.

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ICTSS00108 Digital Skills for Small Business Skill Set

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.1.

Description

This skill set addresses the skills and knowledge needed to support small businesses in building a digital presence, transitioning to online solutions and providing online customer service.

Pathways Information

These units of competency provide credit towards BSB30315 Certificate III in Micro Business Operations, ICT30120 Certificate III in Information Technology SIR30216 Certificate III in Retail and other qualifications that allow for selection of these units.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this skill set at the time of publication.

Skill Set Requirements

BSBXCS303 Securely manage personally identifiable information and workplace information

ICTWEB304 Build simple web pages

SIRXCEG006 Provide online customer service

SIRXMKT002 Use social media to engage customers

Target Group

This skill set is for those working in small businesses in any industry who require the skills and knowledge to transform and transition their business models so that they can operate in an online context.

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Suggested words for Statement of Attainment

These units of competency from the BSB Business Services, ICT Information and Communications Technology and SIR Retail Services Training Packages meet industry requirements for applying digital skills to help small businesses transition to an online context.

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ICTSS00109 Entry to Tech Skill Set

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.1.

Description

This skill set addresses the skills and knowledge needed to support individuals in gaining basic technological knowledge and general ICT skills as they enter into specialised and non-specialised ICT careers.

Pathways Information

These units of competency provide credit towards ICT30120 Certificate III in Information Technology and other qualifications that allow for selection of these units.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this skill set at the time of publication.

Skill Set Requirements

BSBXCS303 Securely manage personally identifiable information and workplace information

ICTCLD301 Evaluate characteristics of cloud computing solutions and services

ICTICT443 Work collaboratively in the ICT industry

ICTPRG302 Apply introductory programming techniques

Target Group

This skill set is for people in all industries who are seeking a pathway into the ICT industry and require upskilling in general ICT skills.

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Suggested words for Statement of Attainment

These units of competency from the BSB Business Services and ICT Information and Communications Technology Training Packages meet industry requirements for gaining basic technological knowledge and general ICT skills.

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